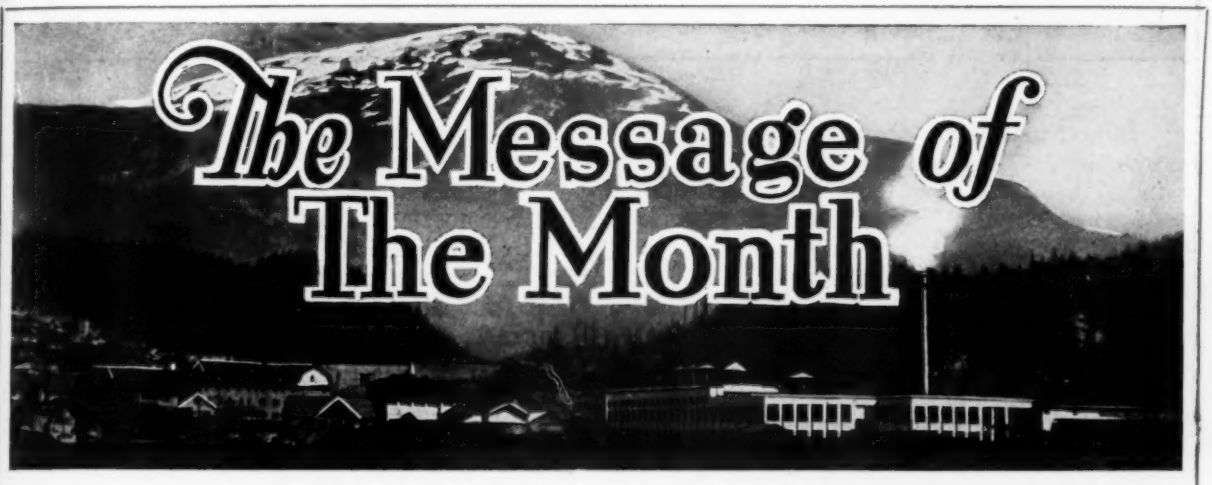


Controlled Production Produces Profits

THE first six months' business for 1927 has been written on books.

The volume is exceedingly creditable.

The profit to producers and distributors in the main, is disappointing.

It could not be otherwise.

What's the reason?

OVER-PRODUCTION.

Over-production in almost every line of commodity has been the cause of shrunken returns.

But we are in for a new deal—over-production must cease and controlled production must obtain.

We in the paper industry have a great deal in these days of "net profit control" advocated by distributors.

"Net profit control" merely is another way of saying that the most important thing in merchandising is not price, but profit.

Profit is the result of intelligent, controlled production.

Therefore, it is idle for the distributors of commodities to hope for a controlled profit when production is uncontrolled.

Controlled production alone assures profit. Hence, it follows that the big drive for both producers and distributors to make is for controlled production.

Now, the question naturally arises at this point —what is meant by Controlled Production?

Our understanding of Controlled Production is the exercising of that degree of primary intelligence which prevents over-production.

For instance, there is probably no more unprofitable line of paper for a mill to make today than Sulphite Bond. Why? Because the over-production is so large that competitors in pressing excess tonnage on the market, cut their prices to a less-than-cost basis.

When the price-cutting mills are asked for the reasons for so suicidal a policy, they reply that they must keep their mills running.

The answer to that situation is plain. When over-production is apparent, the remedy is not to keep running, but to shut down. "Oh yes," says the price-cutting mill, "I should shut down and let my profitable competition take the business. Not on your life!"

So, all keep on, each hoping the other will quit, and none approaching the problem from a constructive, stabilizing standpoint. How silly! Who loses? The producers, the distributors and the consumer.

The producer loses profit and must eventually quit. The distributor loses profit and throws the lines out, and the consumer loses by having a flood of cut qualities to deal with which compels him to look for other and better lines.

There are other enemies of Controlled Production today, and by enemies, we mean any factors which make over-production more general and easy. One of them is ignorance; another is bull-headed willfulness; still another is the plentiful supply of cheap money and the desire of investors to put money into industry for profit.

EDITORIAL

But, thanks be to the eternal economic laws which underlie all industrial endeavor, all these inimical factors are about to be short circuited. The American people are the most adaptable people on earth. When they see as plainly as they are seeing today where the fault lies, they take immediate steps to remedy it.

The business and investing public have been puzzled over the business situation. They have found it difficult to analyze the situation out to a plain common denominator expressed in one word, OVER-PRODUCTION, but now they have it. Over-production is the deadly enemy of profit. They realize at last that their whole industrial activity is threatened with an epidemic of "no profit," and you can take our word for it—they will not work nor invest where there is "no profit."

They see and know that the promoters have been leading them into ground floor and sub-cellar investments from which there was no return. They know that investments in paper mills, bag mills, board mills, shoe factories, textile mills, tanneries, glass factories, oil wells and farms have paid no profit. Why? Because of the hideous over-production and all the baneful commercial practices born out of it.

Now, the time has come to make the change—OVER-PRODUCTION is to be superseded by Controlled Production and Controlled Production will return net profits.

Controlled production produces profits.

Advertising Paper and Paper Products

ONCE a week at the rooms of the American Paper and Pulp Association in New York, a press conference is held which is attended by representatives of the periodical publications of the paper industry, together with the secretary of the American Paper and Pulp Association and the secretaries of subsidiary and affiliated organizations. In this way, the executive officers of the national association keep in touch with events and happenings that may occur outside the range of official activities, and the trade press at the same time is kept informed of plans and projects for increasing the value of the association both to its membership and the trade at large. THE PAPER INDUSTRY, in common with the rest of the publications which represent the pulp and paper industry, reports developments in the various fields, a round-table discussion being held in which all take part.

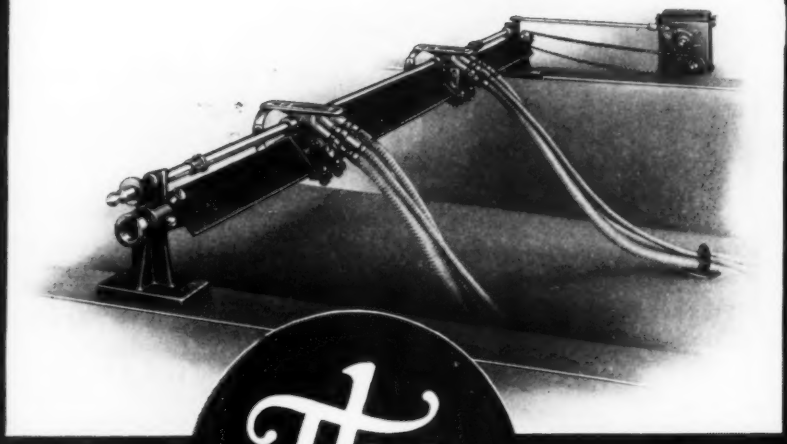
Reference was made in the June issue of THE PAPER INDUSTRY to the expressed desire of the officers of the American Paper and Pulp Association to be favored with statistics of production and shipment from all manufacturers of pulp and paper irrespective of their membership in the association. While the response to this appeal for statistics was not as satisfactory as it might have been, interest in the subject has nevertheless been stimulated and increased support given to the statistical work of the association.

Each week a new angle of the association's activities is brought out, the latest to be uncovered being a method of meeting new sources of competition connected with modern advertising methods. In earlier times, it was an article of belief that competition was the life of trade, but with the rise of new forms of competition through advertising, the older notions of what constitute competition have undergone some revision, and it is now generally recognized that not competition of the old price-cutting kind but advertising of new uses for commodities is the ideal method of increasing business prosperity and stabilizing industry.

One of the questions raised at a recent press conference was, Is the paper industry selling the buying public? Have not mill executives and their associated group been so busy selling their goods as to overlook this new competition which necessitates industry advertising? The inference was that unless an advertising campaign were undertaken to make possible consumers of paper more conscious of the multifarious uses of paper and paper products, the money of the purchasing public would go to the radio, fur, automobile or other industries that are now energetically advertising their products.

While nothing definite was proposed, the thought was left with the representatives of the paper industry publications that their assistance in formulating a plan of campaign to create an increased demand through an advertising drive for paper and paper products would be greatly welcomed, it being felt that, adequately supported, the American Paper and Pulp Association was capable of handling a nation-wide advertising campaign that would enable the industry to compete successfully with other domestic and foreign industries whose products now draw the public's dollars.

The thing is in the air and the influence of advertising in increasing prosperity and stabilizing the



The Vickery Felt Conditioner

Considered a practical necessity by paper makers who recognize that profit depends largely upon continuous production of uniformly good paper.

BIRD MACHINERY

Of 359 Vickery Felt Conditioners sold in this country, 67% represent repeat orders.

BIRD MACHINE COMPANY

South Walpole : : Massachusetts

EDITORIAL

industrial life of our country was one of the chief topics of discussion at the recent convention of the International Advertising Association in Denver, while in New York a week or two ago, the Institute of American Meat Packers inaugurated a $500,000 campaign to make America "ham conscious." An advertising drive to this end has been planned to begin July 7 and continue for seven weeks. If other industries have found it profitable to conduct advertising campaigns of this kind, why not the paper industry?

Making a Buyer's Market

THE question, Do you make what you sell, or sell what you make? is asked of manufacturers of paper by the author of an article which appears on another page in this issue of THE PAPER INDUSTRY, who draws an analogy between the practices common in the clothing trade and those in the paper industry.

Why should custom-made paper invariably command lower prices than ready-made paper, while the contrary is true in the clothing trade where custom-made clothes are always more expensive than ready-made clothes? Our contributor's line of reasoning should awaken thought among certain manufacturers who are inclined to pay insufficient attention to merchandising needs and concentrate too pointedly, perhaps, on economies in manufacturing operations.

It cannot be denied that there has been a relative emphatic reduction in the cost of manufacturing paper during recent years as a consequence of more rigid technical control of operations, and it is a truism that to be successful, a pulp and paper manufacturing enterprise must find a quick market for its product at a profit. There is also truth in what is said concerning certain pulp and paper enterprises that are now living on the increment of value of a natural resource, while operating at 100 per cent of production but with an insufficient margin of profit. The slender investment returns that characterize most pulp and paper mill plants can be traced in large measure to the existence of a buyer's market for paper, which is an outcome of mills making what they sell and not selling what they make.

Of course, it may be argued on the other hand that the successful enterprises that get the support and the trade of the consumers of pulp and paper are those that can sell high-grade products for the price of a low-grade product, but the fact remains that papers made-to-order cannot be compared as profit-makers with the standard line products of old established firms which are trade-mark brands.

Harry E. Weston with the Paper Industry

THE publisher of THE PAPER INDUSTRY is pleased to announce to the industry that he has secured the services of Harry E. Weston, who will in the future be associated with our organization. Mr. Weston is so well known in the industry that he hardly needs any introduction. However, it might be stated that his first experience in the industry was with the Hinckley Corporation, Hinckley, New York, one of the best known sulphite mills in America some years ago, where he worked through all the different departments of this company's plant, though part of the time was broken up by school and college work. After three and a half years in college, Mr. Weston was employed in the laboratories of Arthur D. Little, Inc., one of the best known chemical firms in America. Returning to college, he helped to organize and develop some of the now well known work in pulp and paper making, and was for six years instructor in pulp and paper making at the New York State College of Forestry, which is connected with the Syracuse University, Syracuse, N. Y.

Mr. Weston is a member of many scientific and chemical societies, among which is the American Academy of Political and Social Science, a member of the Technical Association of the Pulp and Paper Industry, and also the Superintendents Association, and he has written many pamphlets and papers on paper making and paper making machinery, and during most of his stay at college he operated the experimental and semi-commercial pulp and paper making laboratories connected with the school.

Mr. Weston is a well known writer of many pamphlets, papers and books on subjects pertaining to the industry, and the publisher, as well as the whole force of THE PAPER INDUSTRY, is particularly well pleased to have a man of Mr. Weston's type associated with us. This is just another move by this organization to better serve the whole industry.

THE PAPER INDUSTRY

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Vol. 9 JULY, 1927 No. 4

Interesting Pulp and Paper Laboratories of Europe

V—Eberswalde, Germany—The Experiment Station for the Chemistry of Wood and Cellulose

By LOUIS E. WISE, Ph.D.

Professor of Forest Chemistry in the New York State College of Forestry, at Syracuse University

This article is the fifth of the series in The Paper Industry prepared by Doctor Wise during his European tour. He returns to the New York State College of Forestry at Syracuse to resume his work there, and we may expect some further articles from him in the near future.

I HAD known Professor Schwalbe for a number of years—not personally, but by reputation. In his classical monograph **Die Chemie der Cellulose**, a pioneering work in Germany 16 years ago, he had described, with the greatest care and in masterly fashion, the fundamental physical and chemical properties of cellulose, and its derivatives and the sources from which cellulose was obtained. He had critically reviewed and extended the analytical methods used in the examination of cellulosic material. He had contributed important articles to various scientific and technological journals, on the chemistry of cellulose and of wood, and on control methods used in the pulp and paper industry. He had taken out a large number of patents on processes, frequently connected with that industry. He had built up an important institute at Darmstadt, devoted to cellulose research. His efforts had brought him an international reputation long before cellulose had become the favorite subject for investigation and polemic in scores of continental laboratories. And so it was through his writings that I knew Dr. Schwalbe—writings which had influenced the pulp and paper industry in every civilized country of the world.

And yet, after I had made my little pilgrimage to Eberswalde (his home and his workshop), I found that I hadn't known Dr. Schwalbe at all. For I had known the scientist and not the man, and the loss had been mine. For this quiet, friendly, whimsical gentleman, with his calm exterior, his keen technological sense, and his fine powers of observation had met and conquered circumstances so cruel and harrassing that they would have proved the undoing of a weaker and less gifted man. Professor Schwalbe saw his plans delayed, curtailed, and ruthlessly shattered. He continued his important work quietly, patiently, with unaltered zeal, thoroughness and initiative. It is not too much to say that he mastered an impossible situation. And therefore, I feel that I personally missed much in not knowing Schwalbe, the man, much earlier in my own career.

The Eberswalde School

In the quiet old town of Eberswalde, some 30 odd miles from Berlin, is one of the principal forestry colleges of Prussia. Here the future chief foresters receive their fundamental preliminary training. Here also is concentrated the forest research of the state, and it was here that the Experiment Station for the Chemistry of Wood and Cellulose (Die Versuchs station für Holz und Zellstoffchemie) was established in 1913.

Up to 1920, this educational center was known as a Royal Forest Academy. The school dated back to 1830, and it was only 90 years later that it was converted into a Forestry College (Forstliche Hochschule), headed by a rector (elected each year by the professors of the college, and ratified by the Prussian Ministry of Agriculture, Domains and For-

ests). The organization of the Forstliche Hochschule is entirely analogous to that of the German universities and is not so very different from that of our New York State College of Forestry, at Syracuse. Its different branches of teaching and research are maintained under the direction of full professors who are specialists in these fields. At the time of this writing, Eberswalde has 12 such professors, whose positions are maintained by the state, and who give impetus to research which they consider of special importance, e. g., silviculture, management, forest protection and utilization. Prof. Schwalbe holds the chair of chemistry.

Since this article is written largely for men whose interest is in the pulp and paper industry, it is not essential to go into the details of the training of a Prussian forester at Eberswalde other than to say that he must be a graduate of the public school, the "gymnasium" (which takes him about two years further than our own high school); that he receives a training in the fundamental sciences for one and a half years; that he then has one and a half years of training in forestry; that each period is followed by a suitable examination, and finally, that he has a period (or several periods) of apprenticeship in the field, before the coveted position of "Oberförster" is reached.

Professor Dr. Carl G. Schwalbe, director of the Experiment Station at Eberswalde

In the training of the forester, the natural sciences play a very live rôle, and chemistry has its place in the curriculum. So the regular forestry students are given 4 hours a week of inorganic chemistry during the "winter" semester, and 2 hours of organic chemistry per week in the "summer" semester, as well as one period of chemical laboratory work (Chemische Übungen) in each semester. Besides this, the Professor of chemistry also teaches a laboratory course in mineralogy during the summer semester, a teaching schedule, which in Germany is considered a rather heavy one. This is not all of Professor Schwalbe's instructional work however, as I shall indicate as we proceed further.

Dr. Schwalbe—Its Director

Now to come back to the main theme. It was in 1913 that Professor Dr. Carl G. Schwalbe was made Director of the Experiment Station for Wood and Cellulose Chemistry at Eberswalde. The origin of this station may be traced back to a meeting of German pulp manufacturers, whose confidence in the ability, and detailed technical knowledge of Dr. Schwalbe was shown, when they collected some 3,000 marks—a sum which laid the foundations of the project, and which later helped in the purchase of experimental equipment. To this manufacturer's "nest egg" were added some 17,000 marks, given by the state, with the authorization of the Minister of Agriculture.

With these funds in hand, the new institution was founded, and became a division of the Forest Research Experiment Station, pre-existing at Eberswalde. The new station for chemical and technological research became, so to speak, a member of the forest research family.

The new member started its career under what seemed to be very auspicious circumstances. The pulp and paper makers certainly realized its importance, and the state backed it morally and financially. Its new equipment, supplied at cost by the manufacturers, was excellent and lent itself admirably to semi-commercial investigations. It is true that the quarters of the installation were a bit cramped but there were plans for adequate expansion and elbow room in the not-too-distant future, which looked bright and rosy.

Professor Schwalbe and his assistant, Dr. Bjarne Johnsen (now chief chemist of the Hammermill Paper Co., of Erie) set up their equipment in the cellar of the Forest Academy—a rectangular space covering some 1,000 square feet. This was to be a provisional arrangement.

Description of Equipment

The main pieces of equipment consisted of the following:

1—Two small autoclaves, gas heated (with automatic gas regulator) and each provided with pressure gauge, safety valves, and the means of withdrawing or introducing steam, gases, or liquids during the course of the experiment. The capacity of each of these autoclaves was about 8 liters, and they could be operated at pressures as high as 25 atmospheres. One of them was constructed of iron, and served in making small scale alkaline digestions; the other, of acid-proof bronze (into which was fitted a remov-

able porcelain vessel) served in making miniature orientating digestions.

2—A small beater, operated to disintegrate, and hydrate products obtained from the aforesaid autoclaves.

3—Two semi-commercial tumbling digesters of 30-40 liters capacity, well insulated, provided with direct

Courtesy of Prof. Schwalbe

Equipment of Eberswalde Experiment Station for Chemistry of Wood and Cellulose

and indirect steam, used in making larger, quantitative experiments. These could be used in cooking 5-6 kilos (11-13 lbs.) of wood. One of these was tile-lined, provided with a bronze cover and armature, and suited to the sulphite process. The other served in alkaline cooks. Both of these digesters were also provided with inlet and outlet tubes. For example, during the actual cooking operation the sulphite digester could be coupled with a condenser and cooling device, so that escaping gases could be measured.

4—A beater of 40 liters capacity with bronze roll, further disintegrated the products from the above cooks.

5—Two semi-commercial tumbling digesters, of 500-600 liters capacity, also provided with direct and indirect steam heating. One of these was lined with acid-resisting brick, and both were thoroughly insulated. Each of these digesters served to produce 50-60 kilos of pulp in a single cook, and in a series of operations extending over a week or two, sufficient pulp could be produced to permit an experimental run on a commercial paper machine (in some co-operating mill—for the laboratory itself was not provided with such equipment).

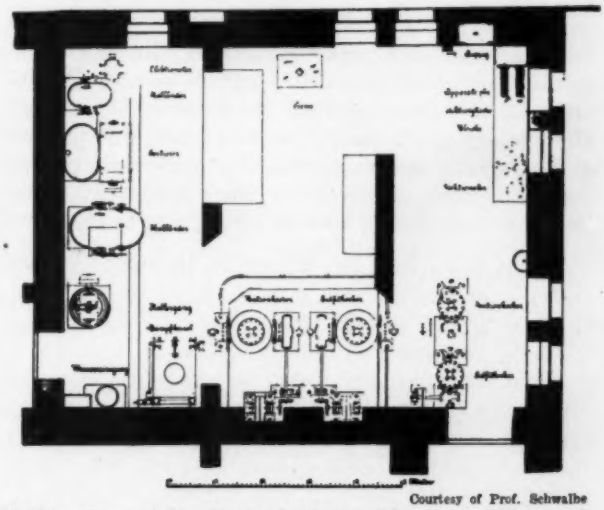
6—A Lilienthal tubular boiler, supplied the steam for the four digesters. This boiler had a heating surface of 6 square meters, which could be called into rapid service by a gas heater, and which, on the other hand, could be put **hors de combat** just as rapidly. A water-purifying equipment went with the boiler.

I see no need of burdening the reader with detailed descriptions of the small screen, "kollergang," electrolytic bleaching equipment, and the pulp press. Nor need I do more than mention the convenient wooden tank, on the floor above the digesters, in which sulphite cooking liquor could be easily prepared by passing SO_2 from cylinder into milk of lime, and from which the liquor flowed by gravity into the digesters in the cellar below, without vitiating the atmosphere of either laboratory.

I have given this brief resumé in the past tense, for the equipment was installed in 1914, but in the main, it is still in operation today, and practically unchanged (although some of the units, like the Lilienthal boiler, have been replaced by new ones). Dr. Schwalbe told me that the brick lining of the largest sulphite digester (whose shell must now be inspected before further cooks are permitted) had become so impregnated and encrusted, that it resisted all attempts at removal—that it dulled the steel chisels and that hammer blows were unable to disturb its carborundum-like serenity. Professor Schwalbe remarked that he might be forced to discard the digester—shell and lining, if its interior persisted in this obstinacy.

It will be noted then, that the Eberswalde station was excellently equipped for delignification experiments, and for pulp making, and that it was capable of producing large batches of pulp, under carefully controlled and regulated conditions, within reasonable time periods. For actual paper making experiments, it was forced to co-operate with the industry.

While the original idea of the station was not to be as all-inclusive as, let us say, that of the Forest



Courtesy of Prof. Schwalbe

Machine Room of Experiment Station for Chemistry of Wood and Cellulose at Eberswalde

Below—Steam boiler, large soda and sulphite digesters; smaller soda and sulphite digesters (30-40 liters capacity). **Right hand (above)**—Motors electrolytic bleach equipment. **Above (center)**—Pulp press. **Left hand**—Motors, beaters, Kollergang.

Products Laboratory at Madison, it was much broader than a description of the pulp-making equipment would suggest. Wood preservation, and the broadest chemical utilization of wood fell within its domain. Naturally this included wood distillation, the chemistry of the resins, etc. Drying of wood was also included.

Influence of the World War

It was hoped that the above installation would be purely temporary, and that, in 1915, the apparatus could be transferred to a roomy building, in which the other work on forest products could then also be energetically developed. However, the anticipated expansion, with its new building did not materialize! The war broke during the first year of the station's existence, and, while in the early years of the war, the state still gave appreciable funds to the station,

Courtesy of Prof. Schwalbe

Small digesters at Eberswalde Experiment Station

and the pulp and paper industries, through their splendid organizations, still lent the station marked financial aid, the years of the German Revolution and the ensuing inflation left the important project at Eberswalde in dire straits. Not only were the industries forced to relinquish their foster-child, but the state government also cut its support to the bone.

It was then, that Dr. Schwalbe, through his own activity, and out of his own personal reserve kept the experiment station from closing its doors. The courage, and energy of the director, in the face of unusual discouragement may be read "between the lines" of a remarkable progress report in a German forestry journal (Zeitschrift für Forst und Jagdwesen, September 1925). This report has been freely drawn upon for much of the information given in the following pages.

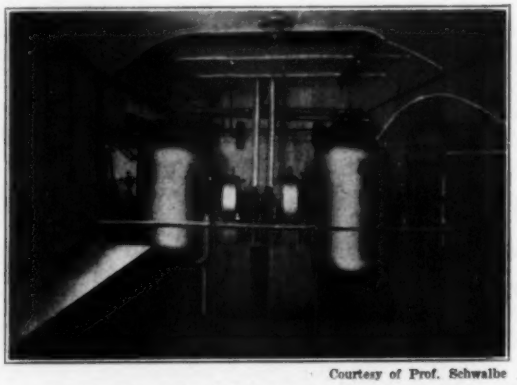
The official staff of the station, at its opening, was a very slender one. Besides the Director, there was a trained chemist-as-assistant, supported by the state, one technician, and one laboratory boy, who gave only part time service. Even before 1924, the size of this staff had to be increased. A laboratory assistant and a stenographer were added, despite the fact that the yearly income of the laboratory had shrunk to only one third of its original amount, and that the purchasing power of the mark was considerably lower in 1924 than it was in 1914. This paradox is explained by the fact that Dr. Schwalbe paid, and still pays, the salaries of the additional laboratory assistant and the typist out of his own pocket, and that, during the lean years following the war, he personally secured the funds to balance the budget, and to keep the laboratory alive, and active.

In fairness to the pulp and paper companies, it must be said that while they did not give money, they still supplied raw materials and chemicals in amounts which helped materially in the experimental work of the station.

Other Difficulties

Another dark side of the picture was the apparent difficulty in convincing the forester that scientific studies in wood chemistry and the chemical utilization of wood were really essential to forestry research. To some technical foresters, the Experiment Station appeared to be an interloper, an unnecessary luxury, and one which belonged more properly to the industry than to the forest. Of course, this narrowness of vision could not be ascribed to all foresters; only to those who lost interest in the fate of the log after it had once been removed from the forest. At all events, Professor Schwalbe actually had to defend his position and explain the **raison d'etre** of his laboratories. The rôle of liaïson officer between the forester and the industry certainly became a difficult one, in the depression resulting from inadequate financial support, inadequate space and facilities, an undermanned staff, and the skepticism of some of the very men in whose interest the work was being undertaken.

The question naturally arises: "Could the Experiment Station at Eberswalde accomplish anything at



Courtesy of Prof. Schwalbe

Large soda and sulphite digesters at Eberswalde

all during these later years of its struggling existence?" It might easily have been excused, if, in the post bellum period it had simply tread water, kept afloat, and awaited better times. But it must be said, and that most emphatically, that the station was **never** idle. It never drifted. In fact it was remarkably active, and its accomplishments are little short of

marvelous. During the war, and during the economic tragedy which followed, the station rendered unusual service in a series of investigations, the results of which more than justified its existence, and which are the best replies to doubters and destructive critics.

Noteworthy Investigations

Among the investigations may be mentioned a series on the resins, in which resinous trees were felled, the wood chipped, the chips dried, and the changes taking place in the resins on ageing and the relative distribution of fats and resins carefully studied. For example, the distribution of resin in the tree was determined, and it was found that the richest store house for rosin was in the stem directly above the roots, not in the roots themselves, as had been previously supposed. The stumps of pine trees therefore furnished an excellent source of resin supply (this is in harmony with experiences in our own southern pine forests). It was also shown that the fat content of the resinous material was exceedingly high. For example, more than 50 per cent of the total substances, that could be extracted from sapwood by organic solvents was shown to consist of fats. Futhermore, Schwalbe and his co-workers showed that in saw dust, the resins, which at first are very soluble in benzol, become practically insoluble after the sawdust has been stored. Evidently chemical changes had taken place.

This question of resin extraction entered into the production of cattle feed (of which we shall speak presently) and also into the production of **sulphite** pulp from **resinous** wood. Extraction with benzol proved entirely unsatisfactory. On the other hand, extraction with dilute caustic soda solutions (0.5 per cent or less) proved eminently satisfactory in removing resins. In other words, pine chips pretreated with very dilute caustic soda could be converted into pulp by the sulphite process. So much for the resins.

The Experiment station also busied itself with the composition of different hard and soft woods, devised new and modified schemes of analysis, and brought down the cost of analyzing lignified fibers in plant laboratories. The original ambitious program of studying the composition of several hard and soft woods at different heights of the tree, and of the sapwood and heartwood, had to be curtailed because of the lack of funds.

Another set of experiments included studies on the adsorption of gases by spruce wood. It was shown that a rather lively stream of sulphur dioxide gas was taken up completely by a column of wood chips, six feet in height. Carbon dioxide could also be adsorbed in this way. Adsorption of this type served in part to displace the air in the cell cavities of the wood; and wood chips, which had undergone such pretreatment could be very rapidly impregnated with cooking liquors. This was due to the fact that the adsorbed gases were very soluble in such liquors, thus leaving partial vacua in the cell cavities, into which the chemical solutions were then sucked with remarkable rapidity.

However, the gases taken up by wood entered not only the cell cavities. Appreciable amounts were retained by the cell walls themselves. Nor were carbon dioxide and sulphur dioxide the only gases adsorbed. For instance, the odoriferous and nauseating methyl mercaptan, produced in the sulphate pulping process, and which lends charm to sulphate pulp mills, is also taken up by wood. The sulphate process may be rendered inoffensive by passing the unpleasant gases through a column of wood chips. The importance of this finding by Professor Schwalbe must appeal to sulphate pulp makers and to all residents near sulphate pulp mills, whether they be in Germany, Scandinavia, or the U. S. A. The discoverer deserves a special vote of thanks, since the mercaptans are not only retained but actually destroyed by the wood chips. When these "adsorbing" chips were steamed or themselves converted into pulp, there was no further evidence of the ill smelling mercaptans. They were gone; lost forever.

Courtesy of Prof. Schwalbe
Steam boiler (recently replaced) at Eberswalde Experiment Station

Special Experiments

Speaking of Dr. Schwalbe's experiments with "gases" leads to an interesting series of experiments which the station carried out on the destruction of old paper money, with a view towards keeping it out of the hands of counterfeiters. Evidently mere mechanical destruction of old banknotes still left fragments which served these swindlers in good stead. However, the treatment of old paper money with hydrochloric acid or with chlorine gas caused such deep-seated disintegration that nothing remained to tempt the fraudulent user. The only disadvantage was that bank-note paper became so valuable, that these disintegrating gas attacks against old bills had to be discontinued.

One of the great developments in Germany during the war was the conversion of wood-waste, like sawdust, into feedstuffs. Untreated wood is not digested by domestic animals, but the components of wood (cellulose and some of the hemicelluloses) when heated with dilute acids under suitable conditions of temperature and pressure yield appreciable amounts of

digestible sugars, which then make the acid treated wood a veritable cattle food.

The discovery of this conversion of wood (or cellulose) into sugar was made over a century ago by an astute French chemist—Braconnot, and had kept several generations of chemists busy. But it received a special impetus during the war, when the question of the national food supply in Germany became a vital and critical one. Attempts were then made to carry out these conversions of wood into feedstuffs on a great industrial scale—sometimes with rather indifferent results, for the engineering problems involved were rather heart breaking. In this field, the Eberswalde station also rendered great service. Prof. Schwalbe and his co-workers found that by using hydrochloric acid gas, they were able to convert 65 per cent of resin-free sawdust into water soluble material, a good part of which contained the nourishing and fermentable hexose sugars; and that most of the initial acid could be recovered.

Correlated with this problem on feedstuffs, the station workers studied the mechanical disintegration of treated wood, with a view towards increasing its food value. As an outgrowth of this investigation, Schwalbe's co-workers discovered that wood flour could be converted quite cheaply into a horn-like substance, the production of which was of real commercial interest, since the product was cheap as well as useful.

Another investigation undertaken by the Experimental station was on the nature of wood gum. Realizing the importance of a highly purified wood cellulose as raw material in certain industries (like the explosives, celluloid, lacquer and artificial silk industries), Schwalbe sought and found cheap means for the purification of wood pulps. Lime (solutions of calcium hydroxide) served admirably as a purifying agent for certain pulps, and it was also found that digestions with sodium or magnesium sulphite removed large amounts of the wood gum (the pentosans) which are present in pulp as well as in the original wood.

The presence of this "gum" in pulp interferes with subsequent operations in the industries referred to above. In studying the action of caustic soda on the original wood, an action which removes a large part of this wood gum, Schwalbe and his co-workers found that the reaction comes to a standstill when the mucilaginous components of the solution are deposited on the cell membranes and block further action of the alkali. This led to a more intensive study of this wood gum, which had already intrigued chemists for a good many years, and it was shown that one component of the gum was glucuronic acid, a substance frequently found in the animal body, but the presence of which had seldom been demonstrated in the plant kingdom. I simply mention this to show how Professor Schwalbe's technological problems are closely correlated with his purely scientific researches, and that these fields can never be separated from each other.

In connection with the conversion of wood into sugar, it was found necessary to pretreat the wood so as to render it more "reactive." In other words, experiments were made to increase the surface offered to the chemical reagents, by causing a swelling of the wood. It was shown that water vapor at ordinary temperature caused much greater swelling than did steam or ordinary liquid water. Futhermore, the length of time during which the wood had been stored after cutting, before this treatment with water vapor, had a distinct effect. The longer the time of storage, the slighter was the swelling. This was also shown to be true for pulps, as well as for wood. Very dilute solutions of organic acids in general increased the rate of swelling enormously, while dilute alkalis, although they also caused swelling of the wood, had a more limited action.

The study of the action of various salt solutions on the swelling of wood, included calcium bisulphite solutions (sulphite cooking liquor). Apparently the rate at which wood chips are impregnated with sulphite liquor is proportional to the concentration of sulphurous acid present. Furthermore, when this impregnation of the chips had reached a certain optimum, the subsequent high pressure cooking operations could be materially shortened. In certain instances, the time of cooking could actually be shortened from 15 hours to 2 hours.

By the mechanical disintegration of wood flour or chemical wood pulps in the presence of electrolytes and certain organic substances, especially organic acids, the particles may be rapidly reduced to colloidal size, and the wood then goes over into the form of a slime, which, after pressing and drying yields a horny mass. This swelling of wood, or cellulose, is an exceedingly important property, and one that has engaged much of Schwalbe's attention. It has a distinct scientific interest, since swelling seems to precede or accompany most chemical changes which cellulose undergoes. It also has a decided technical interest, since swelling reactions are found in the operations of all cellulose industries—e. g., the reactions in the beater, in the case of the pulp and paper industry.

Numerous Wood Experiments

The effect of ageing wood, after cutting, has already been mentioned. This formed the subject of numerous experiments at Eberswalde. The longer wood is kept after cutting, the more difficult does it yield to subsequent chemical treatment. This is also true of wood which has been deliberately dried beyond a certain point. When it is "overdried," its surface becomes hornlike and remains almost impermeable, and defies chemical attack. Thus overdried wood cannot be converted into sulphite pulp. The sulphite liquor does not enter the cellular struc-

ture and delignification does not occur. This "overdrying" must then be prevented in pulpwood. Naturally excessive heating hastens this overdrying, and this is also the case when wood is extracted with certain organic solvents. For example, Schwalbe found that if a resinous wood was extracted with benzol to remove the resins, it was unsuited for the manufacture of sulphite pulp. Not only are these observations of importance to the pulp industry, but to every industry which stores or dries wood before subjecting it to chemical treatment. **Overdrying as well as fungal and insect attack must therefore be reckoned with, as a factor in the depreciation of wood.**

Dr. Schwalbe and his co-workers in studying the pulp production from logs infected with certain fungi, demonstrated that when the fungal invasion reaches the point at which strength tests indicate deterioration of wood, the wood is no longer of value in pulp manufacture. Another interesting technological research!

Needless to say that studies on wood pulps have occupied quite a bit of attention at Eberswalde. The composition of different pulps and new analytical methods for examining pulp have been investigated. Dr. Schwalbe and his colleague, Dr. Sieber, have included these latter in an important book entitled "Die Betriebs Kontrolle in der Zellstoff únd Papier Industrie" (Control methods used in the Pulp and Paper Industry)—a book which has recently been translated into English. Such new constants as the "degree of swelling," "sedimentation volume," "baryta-resistance," etc., which were studied in the laboratory, are included in this volume.

In the pulp bleaching experiments undertaken at Eberswalde, Schwalbe found that carbon dioxide was given off during the bleaching process. When means were found to remove this gas by agitation and by heating, the rate of bleaching was enormously accelerated. This improvement, and many other processes investigated at Eberswalde, are protected by German and foreign patents.

Perhaps one of the most interesting investigations of Schwalbe's laboratory has to do both with the hydrolysis of wood and with wood distillation. It also touches the sulphite pulp industry at one of its nerve centers. I refer to his "wet" carbonization process, which depends in part on the properties of magnesium chloride.

Germany has abundant deposits of this magnesium chloride at the salt mines of Strassfort. It is a cheap raw material. When concentrated solutions of this salt are brought into contact with wood or other vegetable fibers, it gives off hydrochloric acid. This acid converts the polysaccharides of the wood (cellulose, et al) into sugars, and these sugars on the application of relatively mild heat are carbonized. The lignin of the wood is also decomposed. The carbonization reaction may be carried out at 200 Centigrade or below. The salt impregnated wood becomes a good conductor of heat, and the temperature of carbonization can be controlled. It is far below that obtaining in the usual destructive distillation of wood; carbonization takes place uniformly and smoothly, and secondary reactions (like the formation of acetone) are prevented. The yields of acetic acid and methanol are therefore much higher than in the case of the usual wood distillation. If the carbonized material, obtained at lower temperature, is then heated further, it may be converted into charcoal and tar.

Schwalbe has applied this "wet" carbonization in the utilization of sulphite liquor. He proposes to convert it into coal. Every sulphite pulp maker knows that his spent liquors carry off the lion's share of the wood substance, and incidentally pollute streams and kill fish. In Germany at least there is the possibility that this loss, which amounts to over 800,000 tons annually, may be retrieved. If the method is successfully applied—and it is being exploited industrially at present—it would mean the possible production of 400,000 tons of "coal," from a very annoying and unpleasant waste product.

I should really continue and outline Dr. Schwalbe's work on wood preservation of freshly felled logs, which has become a very important part of the station's activities, and the results of which have awakened the enthusiasm of the forester himself. I should also outline Dr. Schwalbe's plans for the future—which include studies on the drying of wood, besides also mentioning his work on "barking" and on the production of half stuff. But to the reader it may seem that I have already given a very long review.

Before leaving the discussion of the results obtained at Eberswalde, I should like to point out their fundamental nature, and also to emphasize the fact that many of the problems, which at first glance appear quite different, are closely interrelated and affect more than one industry. For instance, studies on resin extraction affect not only pulp production but cattle feed production as well. Studies on wood gum are interesting to the phytochemist but they also have a direct bearing on all the cellulose requiring highly purified raw materials. Studies on swelling are fundamental to every chemical industry involving wood and wood pulp. Studies on drying and "overdrying" of wood, again can be correlated with resin extraction and are of importance to practically every industry involving chemical forest products. Studies on carbonization touch the hydrolysis of wood, wood distillation, the sulphite pulp industry, and so on. Such a remarkable network of interrelated investigations could only be carried out under the leadership of a research director, who is a past master in the chemistry of wood, and who has his finger on the pulse of the **entire** cellulose industry.

Dr. Schwalbe's Co-Workers

The reader may ask himself how it was physically possible for such a small staff, with inadequate funds

to carry out such an unusual number of difficult, painstaking experiments! The answer is found not only in the genius of Dr. Schwalbe and in the fact that he chose able and loyal assistants, but also in one other exceedingly fortunate circumstance that has not been mentioned heretofore. Dr. Schwalbe is not only Professor at Eberswalde, he is also Honorary Professor of Cellulose chemistry at the Institute of Technology at Charlottenburg in Berlin. Here he gives two lectures a week on the chemistry of wood and cellulose.

While Professor Schwalbe's forestry students at Eberswalde are naturally not qualified as research chemists, the students at Charlottenburg have a totally different background. They have been trained in the physical sciences (physics and chemistry) and in engineering, and are therefore well able to follow advanced studies in chemical technology. Every year, a few of these gentlemen become candidates for the doctorate and carry out their research at **Eberswalde** under Professor Schwalbe's direction. The work of these men has helped in furthering the progress of the Eberswalde station, and the results are accepted for the doctorate by the Technical Institute at Berlin—an excellent arrangement. For not only does it give the station a fountain head for well-trained chemists, but it gives a small and fortunate group of advanced students at Charlottenburg the privilege of being trained and stimulated by Prof. Schwalbe. Then too, with the consent of the Prussian Ministry, the Experiment station at Eberswalde has become an institute of the Technische Hochschule at Berlin. This, as Prof. Schwalbe has pointed out, is in line with the decentralization noted in the development of the large German technical schools. Attempts are no longer made to create new, specialized institutes in the immediate vicinity of the mother institution. Rather it is becoming the fashion, as necessity arises, to affiliate with such technical schools, pre-existing laboratories, experiment stations or institutes, irrespective of whether or not they are in close proximity to the school.

I am sure that Dr. Schwalbe would want to have due credit given to his enthusiastic co-workers, who helped in making the Experiment station for Wood and Cellulose chemistry what it is today. The following list includes a number of chemists who have since become "key" men in the cellulose industries: Drs. Johnsen, Schulz, Becker, Behringer, Nägeli, Wenzl and Schepp (Dr. Schwalbe's assistants); Miss Berling (his co-worker), and Messrs. Sieber, Bay, Bernheimer, Schrimpff, Grimm, Schmeil, Teschner, Berndt, Feldtmann (his advanced students, candidates for the doctorate).

Dr. Schwalbe—the Man

I have given this panoramic sketch of the activities of the station, which has done so much for the pulp and paper industry of all nations. May I be permitted to inject a more personal note, and to attempt to give the reader some little idea of the man who has given his energies, his money and his very life, to the station? May I attempt to give, at random, some of Dr. Schwalbe's views on research, enhanced as they are by his broad experience and mellowed outlook on life.

In his office, and later in the home of Dr. Schwalbe, where I enjoyed his hospitality, we spoke of everything in the world, including of course, some of the problems connected with the chemistry of cellulose and wood. Throughout our conversation, I always felt his lack of positivism, and the workings of an unbiased open mind.

"Theories tenaciously adhered to," said Dr. Schwalbe in the course of the afternoon, "and dogmatic treatment of any subject are exceedingly dangerous to the research worker. They prevent him from seeing all sides of a problem, and they narrow his vision. The cellulose chemist especially must realize this. Far better is it to formulate a working hypothesis than to become a doctrinaire. A working hypothesis need not enslave its author. It can always be thrown overboard when new experimental data indicate that it is no longer tenable, while many theories have enmeshed their authors in unfruitful debates, which have wasted their time and ruined their tempers.

"For example," added Prof. Schwalbe, "take the question of making a choice between **one universal cellulose** and **many celluloses.** There are some chemists who are cocksure that the cellulose of cotton, spruce, flax, esparto, and what not, are one and the same chemical substance. Now, I admit that from present indications this hypothesis seems to be justified, but I am not **wedded** to the idea. It is not a proved fact, and I am perfectly willing to discard the hypothesis without a heartache, if future experiments show that we have had a mistaken notion.

"Similarly, I hold certain hypotheses regarding the formation of swollen cellulose and cellulose mucilage—reactions which are so important and yet so little understood. But I would be the first to discard these hypotheses if occasion arises. So I tell my students that the investigator must keep an open mind and not become addicted to dogma."

Dr. Schwalbe also had something to say regarding research on lignin (which the reader will recall is that part of the wood which the pulpmaker removes in making chemical pulp, and the nature of which is being feverishly studied all over Europe).*

*Mention may be made at this point of an excellent book on lignin by Dr. Walter Fuchs, of the German Institute of Technology in Brünn. This gives a very careful resume of the work on the chemistry of lignin up to 1926 and shows the tremendous scientific and technical advances made in this obscure field. It includes Dr. Fuchs' personal researches and indicates the experimental difficulties which all investigators are still meeting in the study of lignin.

"I don't work on lignin problems continuously," said Dr. Schwalbe. "From time to time, I perform orientating experiments, most of which will prove unsuccessful, and then I turn to something else for the time being. Under such conditions a man doesn't become mired in the lignin field but can gain a fresh viewpoint while he works on other problems."

Eberswalde's Future

And then Dr. Schwalbe spoke of his plans for the future, and I put these last since I want to leave a pleasant taste in the reader's mouth. It looks now, as if after all, Dr. Schwalbe will get the new building of his institute. The plans have been drawn up in some detail, and they show a very substantial structure some 40 feet in width and about 180 feet in length, with several floors and an end room devoted to semi-commercial equipment including that used in pulpmaking experiments. It would be occupied jointly by the Divisions of Soil Science and of Wood Chemistry, and its erection would put an end to the cruel discouragements of the past decade.

When he unrolled the prints showing the proposed building, Dr. Schwalbe preserved his equanimity and spoke with due scientific reservation. "I hope that we'll soon have our new building, but it is not yet an assured fact. It still has to receive the O. K. of the ministry, and we may still strike an unlooked for snag—but at least we can hope!"

And I re-echoed that hope! For seldom had I met with such productiveness in the very face of disaster as I had found in that modest little experiment station at Eberswalde.

Lessons in Paper Making

Lesson XII—The Wire

By HARRY WILLIAMSON
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This article is the twelfth of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

SO easily damaged, so difficult to repair, demanding most care, skill and lost running time to replace. Of all the clothing used on a fourdrinier machine, **the wire** is the paper makers "bogey man."

Like many of Life's bogey men, real or imaginary, however, a study of the wire's characteristics, what it has to do, and what it **can not do,** will dissipate the bogey man element, replacing it with the more congenial term of "friend wire."

The **wire** manufacturer has many problems to worry him, and sometimes we paper makers add to his burden by failing to realize fully what a wire can **not** do. Perhaps a little study of what the wire **is,** and its mechanical operation as distinct from its paper making functions will help us.

Strands of finely drawn wire, either phosphor bronze, copper or brass, specially annealed and woven into a **mesh,** forming a definite number of squares to the square inch, woven to the desired width, cut to the ordered length, then the two ends joined together by a specially woven **seam,** gives us an endless wire cloth of which the **seam** of necessity is of slightly greater **bulk** than the cloth itself. In operation the endless wire cloth driven by the couch roll, in turn **drives** every other roll in contact with it.

1—It is the **mold** in which the paper is formed, and therefore **must** present an absolutely smooth unwrinkled surface of **even mesh,** each revolution to receive the continuous flow of mixed volume from which the paper is to be formed.

2—The strands of wire are capable of a certain amount of extension, but they are **not elastic.** Once **stretched,** they can **not shrink** again to their original length.

To **drive** anything implies **resistance** or **strain.** Possibly if resistance could be eliminated altogether, the wires would become as Kipling described the old soldiers, "they never die, they simply fade away."

A smooth unwrinkled surface implies **tension** to maintain it. To act in the capacity of a driver to rolls necessitates **tension** at driving contact.

The **amount** of mechanical resistance applied, the **arc** of **contact** with rolls made, and the manner of **distributing** the tension, are vital factors in relation to the life of the wire.

Resistance

By the proper **alignment** of rolls to be driven by wire contact, **upkeep** and **lubrication** of bearings, much can be done to reduce this element of resistance to a minimum. Great strides have been made in recent years in the "bearing" problem. We must remember, however, that the best bearing in use will not give satisfactory service on a badly aligned roll.

In discussing rolls in relation to the wear of the wire by driving contact, we would rate the factors in

the following order: **alignment, bearings, lubrication.** The greater diameter rolls are very seldom out of alignment, but it is remarkable how often we find **tube rolls** requiring **vertical** adjustment.

The wire drives the rolls by **arc** of **contact,** and rolls so driven by a **woven cloth** have a tendency to thrust the cross strands of the driving cloth **forward** in the direction of travel. Recognizing this factor, the wire manufacturer makes a special effort when weaving, to **crimp** the cross strands so they will resist the thrusting action of the driven rolls. We can help him and ourselves by seeing that rolls offer an **even arc** of **contact** to the wire across the whole width.

Regarded as a mechanical feature only, **tube rolls** in harder contact with the wire on one side than the other, materially shortens the life of the wire. Another interesting example of the thrusting forward action by **arc** of **contact** drive, is to be found in the conjunction of the wire and top couch roll jacket. Should one side of the top couch roll "sit" further down on the wire than the other, that is have more couch, the jacket will lead on that side. Because of this position, the couch roll jacket on the lower side comes in contact with the wire earlier, and the wire consequently forms a greater **arc** of **contact** with the jacket on that side than it does on the higher side. Hence the jacket is thrust forward and the seam **leads.**

The greater arc of contact also reacts on the wire mesh. A tighter nip is formed between the guide roll and the lowest side of the top couch roll. The cross strands of the wire are also thrust forward but not to the same degree as the jacket. This lesser degree is due to the greater slippage of the jacket under drive stream. Setting the couch roll square again will remedy the fault.

The opposite to this thrusting action is seen in the **stationary resistance** of the guard board to the revolution of the jacketed top couch roll. The jacket runs **into** the guard board which is a stationary object set fairly hard down on the jacket. Should one side of the guard board be set down harder than the other, that side of the jacket will fall behind. If it is not advisable to ease the guard board up a little, then easing the leverage weight on that side will help the jacket to straighten up. This is usually a confusing thought to the inexperienced machine tender. He knows that due to the crown on his press rolls, the greater arc of contact in the center of the rolls will thrust his felt forward in the center causing the edges to fall behind. By applying **more leverage** weight to the press rolls, the edges of his felt will come forward and it confuses him to have to **lessen leverage** weight on his top couch roll to obtain the same result on the jacket.

This is due to the **slippage** of the top couch roll **inside** the jacket, and the greater the leverage weight applied, the greater the slippage will be. With the presses **both** top and bottom rolls tend to drive the weave of the felt forward, therefore the greater the leverage weight applied, the greater will be the arc of contact and driving action by the ends of the rolls in the felt **without** slippage.

A jacket torn off always means a wire torn off as well. Watch the resistance of the jacket to the drive of the wire. Watch the driving action of the wire on the jacket.

Bearings and lubrication are dependent on each other for their successful operation. The **poorest** bearing can be made better by efficient lubrication, and the **best** bearing can be ruined by inefficient lubrication. There is an interesting diversity of opinion in regard to the best bearings for use on the breast roll.

Owing to the difference in diameter between the breast roll and the first tube roll, there is an area of unsupported wire between these two rolls. This area has to receive the greatest weight of mixed volume, and applied weight or force of the slice velocity. As a consequence, the wire has a tendency to sag over this area.

A sufficient **tension** has to be maintained on the stretch roll to eliminate this sagging. With old style bearings, the resistance of the breast roll to the drive of the wire helped to maintain the wire taut over this area. Since the advent of ball and roller bearings for the breast roll, this drive resistance has naturally been greatly reduced and a greater **tension** must be applied to prevent the wire from sagging over the unsupported area.

It is accepted that the wire **must** be kept as taut and smooth as possible over this area. The debatable question is whether the gain from the lesser resistance to drive of the improved bearings will more than offset the wear of the extra tension applied. It is also sometimes argued that this extra tension causes the ball or roller bearings to wear flat. This writer believes that the wearing is due to inefficient lubrication, and the presence of water in the bearings. The driving strain on the breast and couch rolls is horizontal in the direction of the wire's travel, and if the patent bearings do become flat and stall, an examination will find them stopped with the flats subject to this driving strain. **Tension** is applied by the stretch roll and is either **up** or **down.** We believe the improved bearings, properly taken care of, are a distinct gain in the reduction of **resistance** to drive.

Use of Doctors

The next greatest resistance to the revolution of the rolls driven by the wire, is found in the necessary use of doctors. A doctor on the wash roll is an absolute necessity. A doctor on the breast roll on most kinds of stock and modern speeds is also a necessity. A doctor on any of the other inside rolls is a question to be decided by local conditions, but should these be used, they need not be applied so "hard" to the rolls as the wash or breast roll doctors.

The amount of resistance offered by a doctor to the revolution of the roll is decided by the method it is set to the roll. **All** doctors should be set **above** the center of the roll, **against** the direction of rotation. To set **below** center increases the resistance of the doctor and requires **more power** from the medium of drive to revolve the roll.

The best **angle** to set a doctor wherever mechanically possible, is that angle which, continued as a tangent to the circumference of the roll would form an angle of 45 degrees with the bisection of the vertical diameter of the roll.

A nicely "heeled lip" with the moderately fine edge planed to the roll, held in position by the weight of the doctor, and the small weighted leverage arms, makes the best out of a necessary evil on the wash roll.

In a mill in which the writer was employed, the wash roll doctor was fitted in a **vertical** position to roll with its pressure applied partially **on** and partially **below** center. This doctor was held in position by bolts attached to the fourdrinier tie piece frame under the wash roll, and therefore applied a rigid hard pressure against the roll.

During a three day shut down for general repairs, a new doctor was fitted. With a zeal worthy of a better cause, the millwrights tightened the new bolts hard up, and the painters not to be outdone, painted the doctor right up to the lip edge. Starting up with a new wire, the wash roll worked hard and the oiler worked harder. Just as the sheet was ready to go to the first press, the water liquified the paint, the wash roll stuck, and the stock bucked that brand new wire into a heap of metal junk.

Eight hundred dollars and three hours lost running time. That much would buy a nice 1928 Six. **Paint** is **good** in the right place. Tension is splendid correctly applied. The wash roll doctor needs **none** of the first, and precious **little** of the second. There have been many efforts to eliminate the breast roll doctor. We even experimented on an old wire by removing all the save-alls as well as the doctor.

Where water conditions are ideal, and a long fibered unloaded stock is the principal furnish, it is quite possible to run under these conditions. Most of us, however, have to put up with the necessary evil of a breast roll doctor.

The old-fashioned method of applying the doctor pressure to the breast roll is, or should be, as obsolete as the dodo. Adjusting screws operating against springs are sensitive enough to give control of pressure and safety in operation. They should, however, be **re-adjusted**, possibly slackened off a turn **after** the full required tension has been applied by the stretch roll to the wire.

Eliminate as much as possible the resistance to drive in the fourdrinier rolls.

The wire is the medium of drive to all rolls except one.

Save the wire.

In the next lesson we will deal with tension and the practical running operation of the wire.

Detection of Formaldehyde in Paper

By DR. TH. BENTZEN

Chief Chemist, Whiting-Plover Paper Company, Stevens Point, Wis.

IT OFTEN happens that a sample of paper must be analyzed to determine whether or not formaldehyde is present. Sometimes such papers, as for example, blue print paper, already exposed to light, contain compounds which have an influence upon the theoretically correct reagent, as for instance, ammoniacal solution of silver nitrate.

Through a series of experiments on all kinds of coated and uncoated, prepared and unprepared papers, I discovered a reliable and simple method that should have the preference over other methods. My proposed method requires very little testing material, less than half a gram of paper being used to determine the presence of even traces of formaldehyde.

Into an electric boiler, place a pyrex test tube, about 12 inches long and 1 inch in diameter. This test tube should be fitted with a two-bulb funnel tube, or thistle top, secured with a one-hole rubber stopper. If necessary, the test tube may be held in place with a clamp support.

An electric test tube boiler is a necessary part of the equipment of any laboratory where paper testing is performed, but if it is not available, any other adequate heating apparatus may serve.

In addition to this equipment, some aniline water is necessary, and this should be freshly prepared as follows:

Take 5 cc. of Merck or Baker's reagent aniline and agitate it with 100 cc. of distilled water. Allow to stand for five minutes, and then filter through moistened filter paper.

To arrange or adjust the apparatus and perform the test, pour 25 cc. of the aniline water thus prepared into a test tube, and to this add 0.5 gram of the paper-sample cut into small pieces.

Then put a little aniline water into the funnel tube, sufficient perhaps to fill the lower part of the bent connection between the two bulbs. Turn on the current and bring the contents of the test tube to a boil.

If formaldehyde is present, the aniline water in the bulb funnel will turn a milky white after a shorter or longer period of time.

If after about one hour's boiling (as maximum) no reaction takes place, then it may be taken for granted that the paper does not contain even traces of formaldehyde.

Remove the funnel tube before turning off the heat.

It is absolutely necessary that the tube, stopper and the funnel tube are cleaned as minute as possible, as the least trace of formaldehyde (aniline plus formaldehyde) left in the apparatus will react the next time the experiment is performed, whether the paper in question contains formaldehyde or not.

Another way to use the apparatus for the formaldehyde determination is to furnish the test tube with a strong solution of sodium hydroxide and to put a little of the sodium hydroxide solution, in which some resorcin has been dissolved, into the lower part of the bent connection of the funnel tube. If formaldehyde is present the resorcin will turn red.

Factors in Pulp Bleaching

IN A FURTHER study of the bleaching of wood-pulp, the effect of consistence on bleaching was the subject of a communication made by C. E. Curran and P. K. Baird, of the Section of Pulp and Paper, U. S. Forest Products Laboratory, Madison, Wis., at one of the sectional meetings of the Technical Association last February. The conclusion of the authors is that increase of consistence does not affect the final color if the bleach ratio used is just sufficient to produce a low or average degree of bleaching, but that when a high-bleach ratio is used to give a high white there is a definite gain in the final color by the use of high consistence.

It will be noted that the authors use the correct term "consistence" as opposed to "consistency," which is ordinarily a state of mind and not a state of matter. A pulp consistence as generally understood denotes the ratio of air-dry pulp to water, but in this paper pulp, consistence is understood to be the weight of the oven-dry pulp divided by the combined weight of pulp and water. By "bleach ratio" is meant the quantity of bleaching agent used per unit of pulp.

Definition of Terms

It is useful to have some standard definitions of terms used in reports of this kind, and readers of THE PAPER INDUSTRY will be interested to scan the authors' list of terms and their meanings, which are given as follows:

Standard powder is a bleaching powder containing 35 per cent by weight of available chlorine.

Consistence is the weight of the oven-dry pulp divided by the combined weight of pulp and water.

Concentration is the strength of solution in the bleaching system as expressed in pounds of standard powder per hundred pounds of water, or in grams per liter. (This is strictly a chemical term and should not be used to mean **consistence.**)

Bleach ratio or **chlorine ratio** is the percentage of standard powder or chlorine applied to the pulp; that is, the number of pounds of standard powder or chlorine used for every 100 pounds of oven-dry pulp.

The **bleachability** of a pulp is the bleach ratio required to bleach to a standard white.

The **degree of bleaching** is the extent to which a pulp has been bleached, either toward absolute whiteness or toward a predetermined standard such as the magnesia block. It may be expressed in arbitrary colorimetric units such as Ives readings, or in more general terms such as "low," "average," "high," or "brilliant" white.

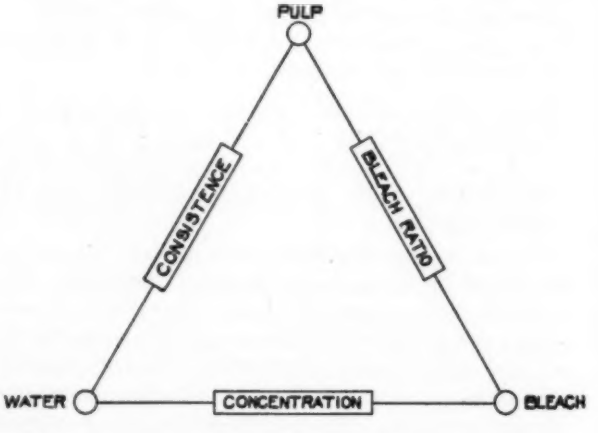
The **alkalinity** of a bleach liquor is the proportion (usually expressed as grams per liter) or free alkali present. It can be expressed in terms of $Ca(OH)_2$, CaO, NaOH, or Na_2O.

The **relative alkalinity** of a bleach liquor is the ratio of alkali to available chlorine present in a given volume of the liquor. It may be calculated by dividing the number of grams of alkali per liter by the number of grams of available chlorine per liter.

In the piece of work which forms the subject of Curran and Baird's paper, the pulp selected for experimental bleaching was an all-spruce "semi-easy-bleaching" sulphite. It was cooked by direct steam process and was afterward machine dried to about 93 per cent oven-dry pulp content. Before bleaching it was reduced by means of a Williams shredder to the cotton-like condition found necessary to insure cleanliness and accurate quantitative work.

The bleach liquor was prepared from commercial bleaching powder in the usual way except that hydrated lime was added in sufficient quantity to insure a saturated solution of calcium hydroxide and thus maintain the high alkalinity necessary to preserve the composition of the liquor.

The authors point out that as regards an increase of bleaching rate with consistence, an alteration of



consistence always involves a corresponding alteration of chemical concentration, or strength of solution in the bleaching system.

After indicating the primary components of a pulp bleaching system, as pulp, bleaching agent, and water, it is deduced that the amounts of each that are present in the system account for the three factors of consistence, bleach ratio, and chemical concentration, the accompanying diagram being used to illustrate the triangular relationship of these factors. This relationship makes impossible the separate control or evaluation of any one, which is not true as regards such independent factors as temperature agitation, etc.

The consistence may be increased by removal of water, but this will alter the water-chemical ratio. For each increase of consistence there would, therefore be a corresponding increase in concentration; increase of the bleaching rate with increased consistence follows according to the law of mass action.

Why an improvement in final color should result as a consequence of increased consistence at a higher bleach ratio is not definitely known. One hypothesis is that in a bleaching system of both high fibre and high chemical concentrations, with more intimate contact of bleach agent and pulp, there is less opportunity than in low-consistence bleaching for dissipation of bleach through side reactions that may consist of further oxidation of compounds already decolorized.

Another view put forth by the authors as one that will be substantiated by data to be published later, is that bleaching, considered both chemically and optically, is a diffusion phenomenon having a surface effect. By this is meant that the chemical must bleach the fibre wall from the surface inward—probably acting principally upon the outer surface of the cell tubes. The combination of high consistence and high bleach ratio probably produces an intensified bleaching action at the fibre surface. It appears from observations made in the present series of experiments that there is a somewhat greater tendency for high-consistence bleaches to "go back" in color upon standing. This probably is a result of the bleaching not having been carried out completely in the interior of the cell wall, so that colored compounds, which have been only partly bleached, can later diffuse to the surface and lower the color to a certain extent.

In closing, it is observed by the authors that high-consistence bleaching may have a weakening effect on the fibre through the formation of oxycellulose, for pulps bleached at high (7 per cent) consistences have a slightly lower alpha cellulose content than have pulps bleached at low (3 per cent) consistence.

Custom-Made vs. Ready-Made Paper

By JOHN S. SCHUMAKER

THE pulp and paper industry does not enjoy the general prosperity that it should. The great amount of new money that has been put into it in the last twenty years, the great economic advance that its personnel has contributed, is rewarded to too great an extent only in knowledge of a service well rendered. Such inadequate reward does not argue well for the future of the industry, nor is the business ability of the industry complimented by the present situation.

Perhaps in the past the industry has been too much captained by its technicians. At least from the results, one would assume there has been an undue concentration on perfecting economies of manufacture without sufficient attention to merchandising needs; or perhaps wood fiber has inherited too much of the lumberman's business philosophy. The nature of his business was always to fill the buyer's specifications, the whole business being something of a gamble. However, a pulp and paper manufacturing enterprise, to be successful, must find a quick market for its products at a profit. No one can deny the relative emphatic reduction in the cost of manufacturing pulp and paper. If under these conditions the industry realizes no adequate return, the fault may lie in its merchandising efforts.

We realize of course that new enterprises have been attracted to the industry but in the main these have come, not because of the large profits made, but rather to realize as a profit the margin of a new economy or to exploit a natural resource. The exploiters of natural resources make no fine contribution to the industry if with their coming they depress the industry to the point where a sustaining margin of profit is denied. More than one pulp and paper enterprise is living on the increment of value of a natural resource.

But notwithstanding these acquisitions to the industry, the industry has operated at substantially 100 per cent of its productive capacity with margins of adequate profit only "spotty" here and there. On the other hand, even during a very depressed market, some enterprises within the industry, not including exploiters of natural resources, have been able to maintain a safe margin of profit. Surely under these conditions some factors in the problem have violated the law of supply and demand.

I believe, by making some comparison with the

merchandising methods of some other industries, we can put our finger on one outstanding violation which possibly in itself accounts for the bulk of the financial distress of the industry.

If a man buys a custom-made suit of clothes he will pay $50 to $125, according to taste and inclination, but if he buys the same goods in a ready-made suit he will pay $25 to $100. For well understood reasons, custom-made clothes are more expensive than ready-made clothes.

Not so in the paper industry. If you want to buy paper cheap, have it made to order. If the buyer is just a little persistent he can get it for less than it costs to make it. This is because the merchandising procedure of much of the paper industry makes a constant, though fictitious buyer's market. The market is all his own even though the industry runs to 100 per cent production capacity. If you don't want the buyer's order at the price, he even knows a manufacturer who will take it at $2.50 per ton less.

But don't blame the buyer, he may not even know how it comes about. All he knows is that he is offered ten to twenty times the tonnage he wants, all purporting to be exactly the same paper. Very frequently it is not the manufacturer's paper the manufacturer proposes to sell him. It is paper to the buyer's sample; custom-made paper. Moreover, he frequently provides two, three or more samples to measure the specifications he requires, one for color, one for caliper, one for formation, and of course, the weight and strength and tear, etc., must be as specified, or perhaps some combination of specifications that he feels suits his requirements.

Indeed in some cases such paper as the prospective purchaser specifies may never have been made, but some manufacturers optimistically offer to make it at cost minus. The price adjustments that follow after delivery are then considered a necessary difficulty of the business.

All this because the manufacturer feels he needs the business, and there is enough of this going on in the industry to make a constant buyer's market for all those manufacturers who are **Making What They Sell** instead of **Selling What They Make.**

Well Known Ready-Made Products

Consider the manufacturer who is selling what he makes. Do you think you could place an order with Gillette for 100 gross of razors with the blades just "a little thicker than the sample?"

Could you place an order for Williams Shaving Cream to be put up in containers like Colgates?

Could you buy a Ford car with a Buick spring suspension? No one sells automobiles that way. They sell what they make and find markets for all makes.

Can you buy steel mill products to off standard specifications without paying a heavy premium?

No, to all of these questions, but in the paper industry, anything is possible because so many mills make what they sell, or try to.

Within the industry, however, there are enterprises which sell what they make; and what is their status? Strange to say these makers of **Ready-Made** paper obtain better prices for their product than do the makers of **Custom-Made** paper. Their marketing procedure is of necessity different. They have only one product to offer: their own.

There are other factors of course which tend to produce a buyer's market. These are too involved to take up here but we should realize this. Fundamentally there is no more tonnage of trade-marked or ready-made paper offered to the buyer than there is machine capacity to make. There may be a natural buyer's market for paper, but at no time is there a true buyer's market for trade-marked paper. That can only be bought from the owner of the trade mark.

In custom-made paper, on the other hand, the buyer finds various offerings of tonnage far in excess of his needs. That's his market and he reacts to it logically. What though the combined offerings are far in excess of the available machinery to make and so represents a fictitious supply.

I believe it is this fictitious supply of paper which hovers about custom-made offerings that persistently depresses the entire paper market. If the tonnage offerings of all mills of the American Paper and Pulp Association could be compiled for a month (or better, for a year), I believe the resultant information would be startling and illuminating.

The following needs to be hedged about with qualifications but is nevertheless so near the truth that I believe it is worth very serious consideration.

For every mill, dependent upon its location, equipment and available raw materials, there is a paper which it can make to the best advantage of the market and itself. If each mill would determine, with the aid of its association, that paper which it can make to best advantage, make a definite transition to that paper and **Sell What It Makes,** I believe it would right the big troubles of the industry.

A difficult task, perhaps. But if a mill cannot make a profit on the paper it can make to best advantage, what hope of profit lies in less profitable orders?

Who would dare to say that with the industry operating at 100 per cent production, the combined orders of all the mills making various papers could not be rescheduled to the mills with a distinct benefit to every one concerned? And would not this rescheduling consist of giving to each mill the paper it could make to best advantage?

The present great task of much of the industry as I see it is to **Sell What It Makes,** and to that end it must have something definite to make. The attendant economies would in themselves constitute a sustaining profit.

Safety and Its Relation to Production

By W. DEAN KEEFER
Director, Industrial Division, National Safety Council

MUCH HAS BEEN written about the remarkable results that safety work has effected in organizations where the safety idea has been seriously cherished. One man will stress the conservation of life and limb; another, extending the first man's tribute, will speak gratefully of the families saved from misery and sorrow; a third will wax lyrical about the reduction in insurance rates, and a fellow will then turn up to tell how safety betters employer-employee relationship.

Safety has effected all these savings and benefits; it still awaits extensive treatment of the rarely put question of whether there is a direct relationship between safety and production. There have been valuable articles on this subject, but still it is a comparatively neglected theme.

For more than half a decade business men have been shifting from a desideratum of mass production to one of unit production—per man, per machine, or per interval of time. It is upon this concept of production that we must base the answer to the question of whether or not safety has a beneficial relationship to production.

Last year there were 24,000 deaths from industrial accidents in the United States; there were also millions of other accidents, some of them causing permanent, others temporary disability. Besides bringing misery to countless thousands—even millions—of homes, these accidents clogged, if but for a moment, the wheels of industry.

The economic waste from such catastrophes is over a billion dollars yearly. And economic waste, say the scientists of business, is the crying shame of the times. No one has defined "economic waste" with the cold brevity and driving force that A. A. DeLeeuw packs into his definition: "Economic waste is that part of expended material or effort which could have been, but was not utilized."

Obviously, the task of industry is to eliminate this waste which is such a frightful annual drain on its monetary resources. And, since accidents represent the very backbone of the malady, safety work will turn the trick.

It may be asked, just what has all this to do with production efficiency? From the point of view of unit production—everything.

An accident interferes with the industrial process. A slight accident, of course, doesn't affect production much one way or another. A man is off the job a few moments, probably to get daubed with iodine or to have a piece of soot removed from and boric acid solution dropped into his eye. The loss is small, but the man in question may hold up a process or get out one less piece of work that day.

A serious accident which causes temporary disability or causes the injured man to "lay off" a month or so has a more definite relationship to production. Primarily the process or processes with which the injured man was connected are slowed up. Less production.

Then there is the matter of replacement, a highly expensive affair which is not completed until, if we may coin terms to fit a need, the **replacer** is as good a producer as the **replacee.** In addition to the actual decreased production, as a result of a new and often inexperienced man doing an old and experienced man's job, a further slowing up of production is produced by various other considerations.

As soon as the new man is hired, he must be instructed. The time and care devoted to this process depends, of course, upon the previous experience of the man hired. At all events, other men must step away from their work to help him out; the foreman must take special care to supervise his work, when, under normal circumstances, he might be giving his attention to increasing the all round efficiency of his force.

Then there is the element of breakage—also a costly item. New men, especially inexperienced ones, unused to their materials and surroundings, are apt to break materials and do a lot of miscellaneous damage. Every time something is broken, adjustment or replacement is needed. Until this is done, the man is idle.

Let us take a concrete example of an accident and see how these principles apply.

John Doe, 20, plugger on a fourdrinier machine, was told to apply belt dressing to the belt running the winder drum. Instead of going down stairs and applying dressing while standing on the regular safety platform, the man stuck his arm under the movable guard on the machine room floor, and while applying dressing to the belt, his arm was pulled in between the pulley and belt and torn off between shoulder and elbow.

Imagine the scene—first the agonized cry; then the rush of fellow employees to the scene; all day long the tense feeling produced by tragedy; the utter lack of morale. Of course, there is the machine unit put out of commission until the plugger is replaced.

And when this is done! Someone has to help the new man half the time, the foreman must always be coming around to see that everything is OK. And lastly there is breakage and damage, mostly petty but not always. All along the line . . . . decreased production.

Accidents, then, make **against** production efficiency. Therefore, safety work, which helps to prevent accidents, naturally makes **for** production efficiency. As Lewis A. DeBlois says, in his excellent treatise, "Industrial Safety Organization:" "We are therefore justified in making the general statement that interruptions to industrial processes tend to decrease operating efficiency, decrease production and increase production costs—the latter quite aside from the expense of repairs, of restoring the service or other expenses directly entailed by the interruptions."

Although the results of safety work have received the testimonials of countless executives of the highest standing, it will be sufficient to quote H. C. Sackett, Alton Box Board & Paper Company, who said at the Detroit Safety Congress: "The part that safety plays in production is keeping an organized force on the job all the time. Of course, aside from your general turnover, an organization that can go along with the minimum amount of accidents actually receives a greater production due to the fact that they have the same organization on the job day in and day out."

As a last argument for the efficiency of safety work in accelerating unit production, we draw a final example outside of the paper and pulp field. F. F. Marquard, Superintendent, By-Products Plant, Clairton Works, Carnegie Steel Company, Pittsburgh, Pa., speaking before the 1921 Safety Congress of the National Safety Council at Boston, offered several examples to prove that unit efficiency is never actually exploited until an accident suggests engineering revision as a safeguard.

"One of the great hazards in hoisting coal," he said, "is the danger of lumps of coal falling from the hoisting bucket. There is also danger of men being injured by the bucket as it is lowered into the barge, especially during the clean-up stage. This hazard attracted our attention and we designed a bucket which enables us to clean up a barge without the use of clean-up men. Thus we not only eliminate one of the most hazardous operations in this work, but we also effect considerable economy by this elimination. The operators soon learn to clean up the barge by allowing less than a ton of coal to remain after cleaning up period without the use of any clean-up men, and further the operators, on account of not having to watch clean-up men during the clean-up stage of the operation, are enabled to unload the barge in practically the same time as was previously done by the aid of sixteen clean-up men."

Who Named Monkey-Wrench?

By M. M. GOOCH

NUMEROUS articles have recently appeared stating positively but erroneously that the monkey-wrench derived its name from James Monckey, its inventor. I do not know the source of this information, but the authors must have come to this conclusion only through unreliable hearsay.

Upon reading the statement several times, my curiosity was aroused and I endeavored to learn more about it. I wrote to the editors of the publications and they referred me elsewhere. I wrote to prominent manufacturers of monkey-wrenches and they frankly admitted that they themselves didn't know. I searched through libraries. Librarians made searches for me. But I got nowhere until finally a manufacturer suggested that I write to Frank L. Coes of Worcester, Mass.

From Mr. Coes, I have obtained information which appears to me to be logical. Much of it is authentic He himself has done considerable searching in the field both here and abroad to ascertain whether a Mr. James Monckey had ever been granted a patent in this field. No trace whatever could be found of the name "Monckey," in any country, as an inventor or maker.

It is claimed that in the early part of the nineteenth century, an English patent was a very hard thing to obtain and therefore little used. It is possible, under those circumstances, that the name "Monckey" is of English origin, but there is no documentary evidence to that effect.

It is true that a patent was issued to a Mr. Monk for the improvement of pipe wrenches, but this is neither the name "Monckey" nor the type of wrench being discussed.

There is evidence that a Mr. Trask wrote Mr. Coes' grandfather late in 1865 to the effect that the term "monkey-wrench" had been in use long before that time. Mr. Trask said he believed the name came with the first use of the English wrench. He suggested that it probably was so called because you "twisted its tail to make it open its mouth."

From this material, I conclude that "Monckey" was not the name of the inventor of any sort of wrench, but a term applied to it, possibly for the above named reason. Mr. Trask's explanation seems a plausible one. Mr. Trask was proprietor of the Trask Foundry, Springfield, Mass., at which Mr. Loring Coes worked in 1839-40 or 1840-41 as a gear pattern maker. The above-mentioned Frank L. Coes is the grandson of Loring Coes.

Along with this misconception of the derivation of the name, there has also been a misconception as to how generally the term is used. This particular type of wrench is not universally known as the "monkey-wrench." It is not always sold as such or ordered as such. "Screw-wrench" is the name which large

buyers prefer. There is nothing definite or universal in such a nickname. In fact it is not used in the South at all, except where there has been, for a long period, an influx of white northern mechanics. In some sections they say "spanner" and in others "screw spanner," both of these terms being direct importations from England and Scotland.

Over a period of twenty years, incoming orders were watched by a large concern and never once was the term "monkey" applied to a wrench on a wholesale order. In other words, the term "monkey-wrench" is seldom, if ever, used by people dealing in them on a large scale. In time the name will, at the present rate, be dropped entirely.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Helping Lindbergh

ENGINEERS as well as all workers in the paper making business probably overlook the fact that they helped Lindbergh perform his remarkable and daring ocean-crossing feat. Thousands of us, without knowing it at the time, had a hand in it. Lindbergh could not possibly have done it alone.

For example, a good friend does office work for a manufacturer of special tools. And the manufacturer of special tools does work regularly for the Wright Aeronautical Corporation, makers of the engine. My friend, therefore, feels that he "did his bit" toward helping to fly over the Atlantic, and I agree with him.

And the same reasoning applies to paper makers. Without paper, civilization certainly would not have advanced as rapidly as it has. There would be no airplanes. I dare say that every important fact concerning flying is now recorded on paper. Paper makes it possible to put all these facts in book form for handing down to future generations of designers and mechanics. Some day a continuous non-stop flight will be made entirely around the world. The successful machine will first be designed on paper. Facts will be carried to the designer on paper. He will do his computing on paper. And the facts will again be recorded on paper for future designers.

Obviously, paper makers have a right to be proud of their accomplishments. Paper cannot supplant the human brain, of course, but it can be, and is, its first assistant, private secretary, and silent partner, all in one. Even this humble thought of mine on "Helping Lindbergh" is being written **on paper** and you are reading it **on paper.**

Bones, Flesh, Brain

IT IS asserted by an eminent surgeon that in the average human body of 150 pounds, there is enough lime to whitewash a hencoop; enough iron to make a tenpenny nail; sufficient phosphorous for two thousand two hundred matches; a pinch of sulphur; sugar enough to fill a small vial and some water. The value of the total in this form is only 98c.

In conversing with a famous artist a short time ago—an artist who receives several thousand dollars for each painting—he told me that the cost of canvas, frame, paint, etc., for each painting averages only four or five dollars. Yet that is more than the value of materials in the human body.

We have all heard of the great worth of a pound of steel when made into hair springs for watches. We have read about the value of some lead pencil marks on a few sheets of paper when those marks are in the handwriting of George Bernard Shaw.

To my way of thinking, though, the most interesting of all is the small value of the human body—only 98c—and the possibilities of accomplishment by that 98c. Napoleon with his 98c worth of flesh and bones made Europe tremble. James Watt, with his 98c body, did a tremendous lot for humanity. It was James Watt who first showed the world how to make steam do our work for us, giving us greater time in which to think and develop other means for reducing labor still more. Very few realize the true worth of James Watt and what he did for civilization. The people of the United States have taken advantage of the application of power to a greater extent than have any other people. Without question, this largely accounts for our supremacy today.

To Reduce Friction

THE "stopping time method" is a good way for operatives to test the efficiency of paper mill machinery.

For instance, it is well known that after shutting off steam, if the engine continues to run for a long time, due to energy stored in the flywheels, it is an indication that the engine is an efficient engine. Thus, if a bearing gets hot, if the engine isn't oiled properly, if the packing is too tight, or if friction is excessive in other ways, the power thereby consumed will stop the flywheels quickly, at least more quickly than when everything is O. K. The longer an engine runs, therefore, after steam is shut off, the better. It should be the aim of the engine operator to make the stopping time as long as possible.

To be sure, the weight of the flywheel has much to do with the stopping time. A wheel weighing 4,000 pounds, for instance, will run about twice as long on the same engine as would a wheel weighing only 2,000 pounds; four times as long as a 1,000-lb.

wheel, etc., but the weight of the flywheel makes no difference so far as this method is concerned. The weight of a given flywheel does not vary from week to week, day to day, or year to year; it is always the same. And the normal speed of an engine does not vary. The speed may be 100 r.p.m. every second of the day or year. Therefore, the amount of stored energy in the flywheel is always constant while running at normal speed. Hence, when conditions are exactly alike in every test the wheel will come to rest in exactly the same method of time during every trial.

This method is very simple and very useful. The only "apparatus" you need is a common watch. Keep tab on the stopping time of your engine. If it takes a long time to stop with all load thrown off, very good. The longer the better.

Why Not Make Tests?

A LITTLE over a year ago I had occasion to investigate a certain type of transmission pulley and I wrote to the manufacturers of that pulley for data.

In reply I received the following letter from which I have eliminated all names:

> "Replying to yours of Feb. 18, we regret to advise that we do not have any definite data in regard to the power transmission and capacity of ———— ———— pulleys.
>
> "We have made these pulleys from 1" diam. up to 20" diam. and from 1" face up to 24" face, and from the number of repeat orders we get—they must give satisfaction in every respect.
>
> "We are advised that the material is so much stronger than the pulleys ordinarily used, that it is preferable even though the price is somewhat higher, as quite often the pulleys have a tendency to fly apart or break down, while a ———— pulley is practically indestructible.
>
> "We would be very glad to submit prices on any sizes which you have in mind."

It is difficult for me to understand why prominent concerns still depend upon users to run tests on their products and "take chances." It is a very simple matter to test a pulley and determine what the coefficient of friction is. Yet, here is a large manufacturer who replies that he "does not know" and on the basis of information given in his letter he expected to make a sale. Excepting in cases of emergency, I would never purchase any pulley on the basis of such scant information.

Slogan Contests

I FIND that it is a pretty safe bet, whenever there is a slogan or name contest, to bet that the name or slogan will NOT be used.

All of which tends to show how ideas differ. Very seldom are two slogans offered that are exactly alike, and seldom are two names offered that are alike. We all think in different channels.

The principal advantage of contests is that the contestants furnish good ideas to the manufacturer, publisher, or whoever it is that is seeking the slogan or name.

Personally, I have vowed several times that I would never again take part in any contest. I have made a little, yes, but I have used considerable valuable time at it. Yet, whenever a new contest is announced I almost invariably sharpen my pencil and try again. There is something alluring about contests. My advice to you is: "Don't waste your time because your chances to win are very slim." Nevertheless, both you and I will very likely enter the next contest, and the next, and the next, etc.

Roller Bearing Economy

ROLLER bearings have been considerably improved of late. During the past twenty years they have been steadily superseding plain bearings, owing principally to the greater friction of the latter. But now there are two more reasons why roller bearings should be given preference: they are "split" in about the same way that plain bearings are split, making installation as easy as installing a split plain bearing; and they are so made that they will fit into any standard hanger. Of course, these two additional advantages have reduced the first cost considerably.

Obviously, the first cost of roller bearings, when split, must be greater than that of plain bearings. But under most installation conditions, where the bearings are in constant use, the higher cost is more than justified. Here is a typical example as cited by one prominent manufacturer:

> "A plant appropriated $10,000 to replace babbitted line shaft boxes with roller bearings. They saved $5,400 the first year on power (15% on 900 h. p. at $40 per h. p.); $750 on maintenance (75% of $1,000); $240 on lubrication (80% of $300). This total of $6,390 represents a return of 63.9% on the initial investment. In another seven months the bearings paid for themselves."

Roller bearings passed through the experimental stage long ago. They are now being used on railroad cars, a service that not long ago was considered "impossible" for bearings of this type. Keep your eye on them and use them yourself if you can.

Lacing Belts

THERE are belt men who still maintain that "the lacing of belts should always be done with rawhide." I take exception to that old rule because most of us should know that there is a special mineral tanned leather on the market that is stronger than rawhide and I am reliably informed that it gives better results. Belt lacing should always be as strong as possible because by having the strongest possible lace its size can be reduced to the minimum. The smaller the lace the better—the less bulky the joint.

Also, it will be found advantageous to use the type

of leather lacing that is provided with metallic tips. With these tips much less time is required for lacing and the lace can be pulled through smaller holes. All belt engineers know why there is an advantage in using as small a hole as possible. The smaller the hole and the stronger the lace, the higher the efficiency of the joint.

To Identify Pipes

AN EXCELLENT kink for identifying pipe lines in such a way so that it may be known what each pipe carries is this: simply paint a band around the pipe close to and at each side of every flange joint. For most purposes this is preferable to painting the entire pipe line a certain color. It looks better and is less confusing.

For example, one firm makes it a practice to paint white bands at each joint for steam lines; a green band for ammonia; lead color for water; blue for air under pressure; yellow for ventilation piping; and red for fire lines, etc.

Also, it is a good plan to carefully label all valves with brass disks. On each disc tell what the valve is for in as few words as possible. The larger the job, the larger the installation and the greater the quantity of pipes used, the more necessary it is to identify all of the pipe lines and to permanently and clearly label every valve.

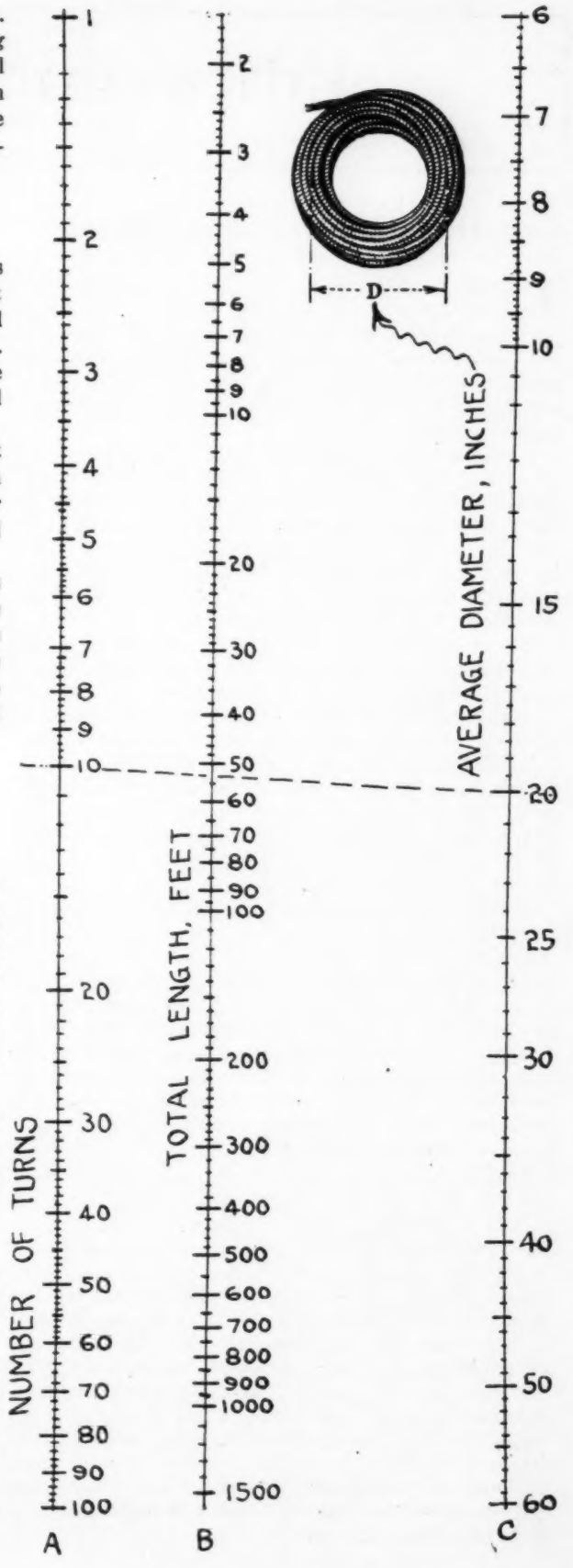
The Length of Anything Coiled or Rolled Up

THE man who handles wire, cable, rope, hose, etc., will find the accompanying chart useful for finding the length in feet of rolled-up cable, cord, lead pipe, tubing, etc. All that is necessary is to count the number of turns and measure the "average" diameter as shown on the chart, and then lay a straight-edge across the chart as indicated by the dotted line drawn in the sketch. The answer is immediately found in column (B).

For example: To find how many feet in a rolled-up cable whose average diameter is 20 in., and in which there are 10 turns, connect the 10 in column (A) with the 20 in column (C) as the dotted line shows, and the intersection with the middle column will give the answer—53 ft.

The range of the chart, it will be noted, is large enough to care for most of the conditions to be found in ordinary practice.

The chart can be used "backward" as well. For instance, if it is desired to take along about 300 ft. of a coiled up article and the workman wants to know how many turns to take, a straight-edge laid across 300 on the middle scale will tell how large the coil should be made and the number of turns required in order to contain the desired length. Paste this scale on a card and hang it up in a convenient place.



Editorial Comment

By WILLIAM SIBLEY

Creating the Desire to Work

THERE is developing, just at this time, considerable criticism of existing immigration laws. Advocates of unrestricted admission of aliens are beginning to make themselves heard again, with the result that all who have the best interests of the country at heart need to be aggressively condemnatory of any such influence.

To the argument for more men (with the background of immigration law repeal) there are many answers. The one safe, and irrefutable answer, is however, machines. American industry does not need more untrained and almost untrainable aliens to do its work. It needs, rather, to employ machines for the work at hand, and limit its personnel so far as possible to skilled and semi-skilled labor.

However successful we may become in the elimination of waste power or lost motion, machines of course cannot entirely supplant human labor. There will always be the need for human labor in the fabrication of life's necessities, and this simple fact will not become contravertible through automatization, at least in the present age. However, the need for common labor has steadily decreased during the past fifty years, and will still further decrease as American manufacturers and employers adopt mechanical means and improved methods.

Indeed, machines can be made not only to augment production and lower costs, but to increase the workman's morale and decrease labor turnover. After all —the greatest problem confronting the management of any mill, plant or factory, is that of creating the desire to work. If every management could accomplish that one thing—create the desire to work on the part of their employees—their turnover would be lowered to the irreducible minimum, and a vast amount of money, time and effort could be diverted to more profitable ends.

In considering the creation of the desire for work we find three subconscious elements that effect such desire. These are: ventilation, light and noise. Without proper ventilation, physical endurance is cut down, which condition is reflected on the production sheet. Light is an equally important factor in determining the productivity of human labor. Noise is a third element that subconsciously effects the efficiency of the workman, which of course bears upon his own as well as his company's earning power. The betterment of any one or all of these three elements will do much toward bringing production to its maximum.

Consciously, workmen demand six major things, the absence of any one of which will materially contribute to labor turnover.

monious surroundings; 3—Security of position; 4—Possibility of advancement; 5—Scope for self-expression; 6—Inspiring leadership.

It will be seen immediately that machinery can be made to definitely apply to all these factors, save the last.

Supplanting common labor, so far as possible, through the introduction of mechanical means is the most economically advisable step any employer can make, not only for the present but for the future. In times of actual or threatening labor shortage it behooves every employer to take particular pains to create the desire to work on the part of his semi-skilled and skilled labor. Much can be done to this end by the elimination of detrimental elements and the application of machinery and labor-aiding devices. Not only will certain machinery effect ventilation, light and noise, but in almost every case will heighten the first five of the six conscious elements. The sixth —that of inspiring leadership—depends entirely upon the individual. The other five (or eight) remain only on your will.

Internal Good Will Valuable Yet Inexpensive

RECENTLY the writer of these lines saw a veritable hornet's nest within one of our large nationally known organizations. And the entire trouble could be laid at the doors of the management for not having sold its employees on the necessity for early and late vacations. A considerable number of employees were growling and threatening among themselves to leave after their vacations were completed. This sort of thing creates labor turnover, which is expensive. Without doubt the present arrangement is advantageous to the firm. A little selling effort on the part of the management would have ironed out every difficulty. No offense was intended; merely a matter of business efficiency. It seemed not to have occurred to anyone in charge to look on the human, personal side of the proposition.

We are all human. The first and cardinal principle for the executive to grasp is the fact that he is employing persons, not "hands." Even the humblest cog in the industrial machine or the most insignificant office help, thinks in terms of ideals, likes, dislikes, aims, ambitions, and personalities. To explain things to them, to know their names, to speak pleasantly, to have a sincerely sympathetic attitude—these things win his good will and dissipate misunderstanding. And the cost of such human contacts is very slight.

—— on Timely Subjects

For example, it doesn't take any more time or effort to say: "We have set aside the first two weeks in August for your vacation and hope when the time comes your work will be cleared away in such shape that you can leave for the period without thoughts of business and thus enjoy yourself to the utmost"—than to say: "Your vacation starts August 1st, for two weeks. Prepare your work for it."

Opportunities to create good will lie within every organization—and in abundance. Offering stock to employees, inaugurating profit-sharing plans, and so forth are some of the "big" things that can be done to help develop good will. But those plans cost money. The little, thoughtful considerations don't cost very much money. And after all, it's the little things that count.

An Interesting Thrift Incentive

VERY often the psychological moment to present industrial thrift and savings suggestions is at the time the workers are receiving their wages. The insertion of printed thrift messages into pay envelopes is an idea of this kind.

An interesting plan has been adopted by one company to encourage the saving of "extra money" which the employees receive on a monthly basis. In this plant most of the workers are on a production bonus schedule, and receive their additional participation for a given month in a separate envelope at the first wage payment period of the succeeding month. At this time the workers are handed two envelopes—one containing the current weekly wages, the other the bonus savings, or rather earnings, for the preceding month.

A short distance from the pay-master's window in this plant is a second window where the management places a bookkeeper who takes the bonus earnings from all workers who so desire it, and banks the money for them. The transaction is short and simple, and it has been found that more than 75 per cent of the men turn from the pay window to the "bank" window and deposit their bonus money to their account in a local bank.

In addition, however, the company has provided an incentive for them to make the desired turn. If an employee banks his bonus through the company, he receives in addition to his regular interest credits of 3 per cent, an extra 3 per cent from the company—provided, of course, he has banked through the company, regularly and without interruption, throughout the entire twelve months. Thus systematic thrift is demanded of each worker, and it has been found that men who rarely kept a bank account previously, under the incentive of the additional 3 per cent (which gives them a total of 6 per cent on their deposits) now are in possession of very healthy balances.

Like all ideas this plan is not automatic in operation. Constant attention to the development of thrift wages is needed, and the wise utilization of the funds saved requires equal consideration by the management. If workers are taught to invest their savings in constructive channels such as home buying, partial payment bond buying, etc., the stabilizing influence of thrift will then be made a reality and the company will profit through the development of a more appreciative and stable personnel.

The Lessons of Lindbergh

THE remarkable achievement of Charles Lindbergh in making the non-stop flight from New York to Paris alone has fired the imagination and captured the admiration of the world as have few other events. There have been many achievements of much greater scientific and practical value, but the spectacle of a 25 year old youngster, reared as a middle-class American and employed as a mail carrier, displaying the personal audacity to fly the Atlantic alone, then literally over-night to walk the polished floors of palaces and salons with a deportment that would have graced an ambassador, has not only successfully but justifiably made popular appeal.

No one can deny that the performance of his craft has powerfully advanced the cause of aviation. This demonstration of reliability coupled with nation-wide public attention focused upon the whole subject of aviation will do much to accelerate universal acceptance of air and passenger delivery.

It will not be long until we all agree on the single fact that flying is actually safer than motoring or sailing. In the old days (and even now because of custom) we were wont to gather at the dock and wish our friends and relatives "bon voyage" when they started a trip across the Atlantic. That was because in years now gone a trip across the ocean was a hazardous undertaking and the voyagers had need for good wishes. Although custom doesn't dictate such a ceremony, the number of accidents reported with automobiles would lead to the belief that "good wishes" were as needed today for motoring as they were fifty years ago for sailing.

When the realization comes that flying is not the hazardous enterprise we once believed, then will aviation expand in this country to the benefit of all. We can assist with the development of this needed rapid transit by making greater use of our air mail service and by employing commercial aircraft for personal transportation when there is an emergency or need for speed.

The Paper Industry Annual Safety Contest

May Scores

44 Mills Hit The Mark

PERFECT SCORES

	PARTICIPANT	NAME OF MILL	LOCATION
Group A	The Champion Coated Paper Co.	Paper, No. 2	Hamilton, Ohio
	International Paper Co.	Otis	Chisholm, Me.
	Kimberly-Clark Co.	Falls	Neenah, Wis.
	Kimberly-Clark Co.	Niagara	Neenah, Wis.
	Mead Pulp & Paper Co.	Chillicothe	Chillicothe, Ohio
	Northern Paper Mills	Green Bay	Green Bay, Wis.
	West Virginia Pulp & Paper Co.	Tyrone	Tyrone, Pa.
Group B	International Paper Co.	Niagara Falls	Niagara Falls, N. Y.
	Rhinelander Paper Co.	Rhinelander	Rhinelander, Wis.
	Mead Fibre Co.	Kingsport	Kingsport, Tenn.
	Great Western Paper Co.	Ladysmith	Ladysmith, Wis.
	American Writing Paper Co.	Power & Repair	Holyoke, Mass.
	International Paper Co.	Fort Edward No. 2	Fort Edward, N. Y.
	Racquette River Paper Co.	Potsdam	Potsdam, N. Y.
Group C	The Adams Bag Co.	Chagrin Falls	Chagrin Falls, Ohio
	American Writing Paper Co.	Gill	Holyoke, Mass.
	American Writing Paper Co.	Nonotuck	Holyoke, Mass.
	American Writing Paper Co.	Parsons	Holyoke, Mass.
	American Writing Paper Co.	Riverside	Holyoke, Mass.
	American Writing Paper Co.	Wauregan	Holyoke, Mass.
	Defiance Paper Co.	No. 1	Niagara Falls, N. Y.
	Defiance Paper Co.	No. 3	Niagara Falls, N. Y.
	The Gardner & Harvey Co.	No. 3	Middletown, Ohio
	The Gardner & Harvey Co.	No. 2	Middletown, Ohio
	International Paper Co.	Livermore	Chisholm, Me.
	International Paper Co.	Montague	Turner Falls, Mass.
	International Paper Co.	Riley	Chisholm, Me.
	International Paper Co.	Webster, No. 9	Orono, Me.
	International Paper Co.	Winnipiseogee	Franklin, N. H.
	Kimberly-Clark Co.	Atlas	Neenah, Wis.
	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
	Kimberly-Clark Co.	Neenah	Neenah, Wis.
	Lincoln Pulp & Paper Co., Ltd.	Lincoln	Merritton, Ont., Can.
	Marinette & Menominee Paper Co.	Menominee	Marinette, Wis.
	Mead Pulp & Paper Co.	Peerless	Dayton, Ohio
	Provincial Paper Mills, Ltd.	Montrose Div.	Thorold, Ont., Can.
	Sorg-Oglesby-Smith Paper Co.	Sorg	Middletown, Ohio
	Strathmore Paper Co.	No. 2, Mittineague	Woronoco, Mass.
	Strathmore Paper Co.	No. 1, Woronoco	Woronoco, Mass.
	Union Bag & Paper Corp.	Cheboygan, Paper	New York
	Union Bag & Paper Corp.	Cheboygan, Sulphite	New York
	The Upson Co.	Board Mill	Lockport, N. Y.
	U. S. Gypsum Co.	Gypsum	Chicago, Ill.
	U. S. Gypsum Co.	Lancaster	Chicago, Ill.

IMPERFECT SCORES

GROUP A			GROUP B			GROUP C		
Key	Rank	Rate	Key	Rank	Rate	Key	Rank	Rate
A-12	8	.04	B-33	8	.02	C-52	31	.03
A-22	9	.06	B-19	9	.04	C- 2	32	.09
A- 4	10	.08	B-26	10	.10	C- 5	33	.11
A- 5	11	.13	B- 9	11	.10	C-29	34	.16
A-21	12	.18	B-25	12	.11	C-13	35	.16
A-20	13	.21	B- 1	13	.12	C-42	36	.17
A-10	14	.22	B-16	14	.12	C-14	37	.17
A-13	15	.26	B-24	15	.14	C-39	38	.17
A- 9	16	.29	B- 4	16	.16	C-35	39	.17
A-24	17	.31	B-12	17	.21	C-26	40	.21
A- 2	18	.37	B-31	18	.30	C- 9	41	.33
A-23	19	.44	B-34	19	.36	C-17	42	.39
A- 8	20	.53	B-20	20	.36	C-16	43	.41
A-16	21	.88	B-35	21	.38	C- 7	44	.47
A-11	22	.92	B-13	22	.40	C-28	45	.63
A-25	23	1.43	B-15	23	.40	C- 3	46	.63
A- 3	24	1.54	B- 3	24	.51	C-46	47	.89
			B-36	25	.58	C-20	48	1.13
			B-17	26	.59	C-23	49	1.24
			B-10	27	.60	C-51	50	1.54
			B- 8	28	.68	C-45	51	1.74
			B-30	29	.70	C-21	52	2.26
			B-29	30	.87	C-57	53	3.30
			B- 7	31	1.11	C-43	54	5.50
						C-22	55	30.17

NASACO LOG

We Shall "C" What. . . .

We are confronted with the realization that the tie scores in the C group mean that the contest must be continued for them indefinitely until that tie is broken. We shall "C," until we see who the winner is!

Annual industrial accident experience of members of the N. S. C., will be ready for distribution about August 1st. If you do not receive a copy and wish one, write 108 E. Ohio St., and obtain yours.

Reservations are already pouring in for the 16th Annual Safety Congress to be held at the Stevens Hotel, Chicago, from September 26-30. What about you?

The Wisconsin members of the Paper and Pulp Section were well represented at the Industrial Conference held at Lake Geneva, Wis., July 8-9-10.

Speaking of Records

Laurentide, with over one thousand employees, has a record for the past three years of only 18 accidents per million hours worked.

Kimberly Mill, Kimberly-Clark Co., with 950 employees in 1924 set a record of only 7 accidents for the year.

Otis Mill, of International Paper, with 916 employees, turned in a record for 1926 of 12 accidents, while Nekoosa-Edwards with 864 employees, achieved a low frequency level of 7.86 accidents per million hours worked, and a severity of only .17 for 1926. "Thinking," safety reflects itself in careful actions. Cultivate the habit—it will pay.

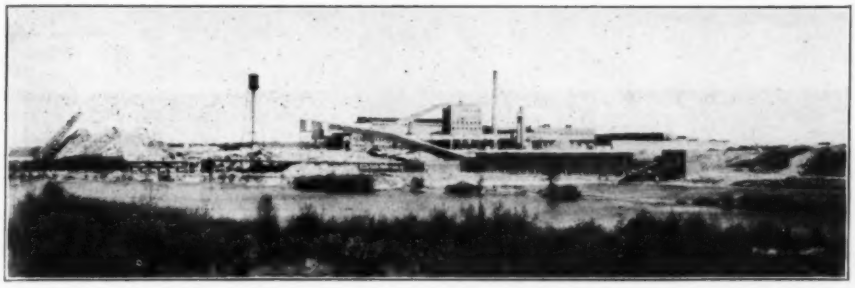
TELLING SCORES

	January	February	March	April	May
No. of Mills	119	116	115	114	113
Total Hrs. Wkd.	8,363,734	7,876,213	8,573,278	8,707,808	8,292,249
No of Accidents					
Death	1	4	2	2	1
Perm. Disability	1	2	6	2	2
Temp. Disability	332	274	274	246	216
Totals	334	280	282	250	219
No of Days Lost					
Death	1000	4000	2000	2000	1000
Perm. Disability	300	350	590	250	100
Temp. Disability	3417	3204	3635	2520	2518
Totals	4717	7554	6225	4770	3618
Frequency Rate	39.95	35.56	32.89	28.72	26.14
Severity Rate	.56	.96	.73	.55	.44

Canadians Hold Summer Meeting

Technical Section of Canadian Pulp and Paper Association Makes Successful and Enjoyable Trip to Saguenay Region

THE summer meetings of the Technical Section of the Canadian Pulp and Paper Association have always been most enjoyable functions, at which all formalities were laid aside and good fellowship held free rein. The trip to the Saguenay region, on June 20th to 25th was no exception to the rule, and was voted by all those who took part in it as the most successful event of its kind held so far. The most sanguine expectations of the organizing committee were exceeded, and 49 members made the most of the opportunity thus afforded them of visiting one of the most interesting pulp and paper making centers to be found anywhere.



Courtesy Pulp and Paper Magazine of Canada

Price Bros. & Co., Ltd., plant at Riverbend, Quebec.

The Canadian National Railways kindly placed a special parlor car at the disposal of the members starting from Montreal, nineteen in number, to join the others at the starting point of the trip at the Chateau Frontenac, Quebec. As several members of the Textbook Committee were on board, business was combined with pleasure, and a special meeting of the Committee was held before the special luncheon arranged by the Secretary in the dining car. Revision of the textbooks is at present under way, and the committee discussed a number of important points in this connection and developed a comprehensive plan for their improvement, particularly the last two volumes which deal with paper making proper.

View Construction of New Anglo-Canadian Mill

After registering at Quebec, the members went on a sightseeing tour of the city, and visited the new mills in course of construction by the Anglo-Canadian Pulp and Paper Co., where exceptionally rapid progress is being made by the William I. Bishop Construction Co. The cribwork footings for the company's wharves are nearing completion, and pouring the cement will shortly be commenced. The buildings are nearly all covered in and the installation of the machinery is already under way. Parts of the paper machines were recently received from England, and their erection had already been started when the party went through the mill.

On their return to the Chateau, a dinner was offered the members and their friends by the Canadian Pulp and Paper Association, after which two special sleepers were boarded which brought the party to the Lake St. John region during the night. The grades on the Lake St. John Railway are too steep to permit the regular train to haul two extra coaches, and the Canadian National Railways made up a special train which left a little later.

A Visit to Riverbend and Ile Maligne

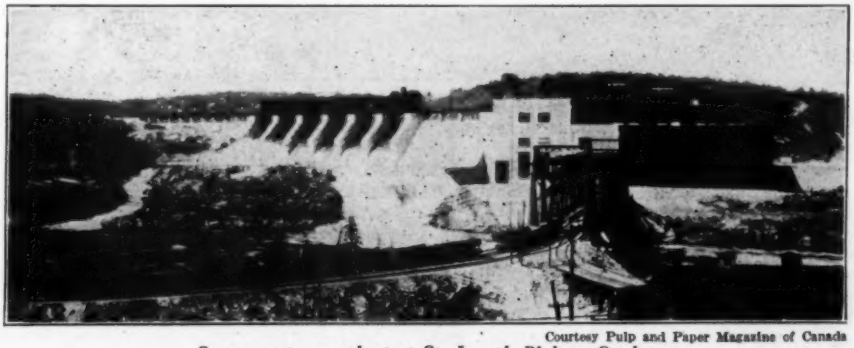
Next morning the party woke up on the siding of Price Bros.' Riverbend mill, and proceeded to the Staff House where a hearty breakfast was awaiting them. After attending to the needs of the inner man, the members were conducted through the mill in small parties. The mill started up about eighteen months ago, with a rated capacity of 200 tons of news a day; but at present it is being extended and two more paper machines are to be installed, increasing the daily capacity to 400 tons. The mill is equipped with electric steam generators having a capacity equivalent to 4,000 boiler horse-power, and coal-fired boilers are now being installed to take care of the increased capacity. Good progress is being made on the extension, which is scheduled to be ready for operation by the end of the present year. One of the features of the mill is the exceptionally well-lighted and clean grinder room, which now houses two grinders with magazines considerably larger than are usually seen, but which have not as yet been started on regular production.

After lunch, automobiles brought the party to the Duke-Price Power Co.'s power plant at Ile Maligne, a few miles from Riverbend, where they were able to realize and appreciate what a 540,000-horse-power hydro-electric plant really means. Twelve water wheels (ten of which are at present installed) drive the 45,000-h.p. electric generators through shafts 24 inches in diameter and the power is distributed to neighboring industries at Port Alfred, Kenogami, Riverbend, Arvida and other points, and a 150,000 volt transmission line will carry the electricity to the Anglo-Canadian mills at Quebec City.

The remainder of the afternoon was spent sailing on Lake St. John on the ocean-going tug "William Price," some of the members being hardy enough to indulge in a dip in the chilly waters. Motor cars then brought the party to one of the lumber camps of Price Bros. at the Petite Décharge, where a real good lumberjacks' supper was heaped on the table. Appetites keenly whetted by the afternoon's sail did ample justice to the cook's culinary talent.

Kenogami and Visit to Aluminum Plant

Wednesday morning the special sleepers were taken to



Courtesy Pulp and Paper Magazine of Canada

Saguenay power plant at St. Joseph D'alma, Quebec

Jonquières, whence the party motored to Kenogami for breakfast. Before proceeding to the mill, Mr. Babbitt, secretary of the Minton Vacuum Drier Company of Canada, gave a lecture describing the principle, construction and operation of the Minton vacuum dryer, which was made very clear and intelligible with the aid of lantern slides. It consists essentially in surrounding the nest of dryers with a heavy cast iron chamber, reinforced so as to stand the tremendous pressure to which it is subjected, with sealed inlets and outlets for the paper. When starting up, vacuum is created by

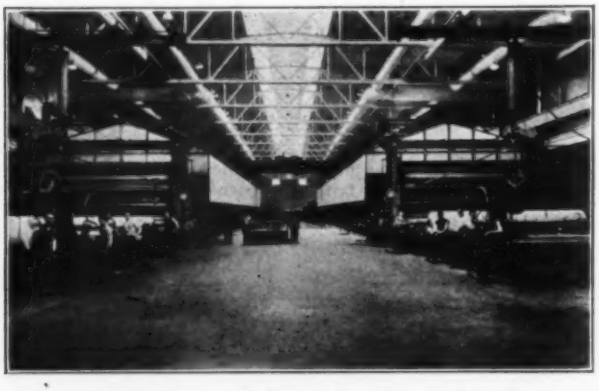
Courtesy Pulp and Paper Magazine of Canada

General view of Kenogami Paper Mills, Price Bros. & Co., Ltd.

means of a suction pump, but when the water begins to evaporate from the paper the vacuum is maintained by condensing the vapors, and a vacuum of 28 inches of mercury can be readily maintained. A full-size commercial Minton dryer is now in operation at Kenogami, and the results obtained will be watched for with great interest by the whole paper industry.

Another interesting feature of the Kenogami mill is the Decker sulphite cooking system, whereby the hot relief liquor from one digester is used to heat up the contents of another before starting to cook the latter.

After lunch at the Kenogami Staff House, the party motored to the big aluminum plant at Arvida, where alumina, prepared from British Guiana bauxite at one of the company's United States plants, is converted into metallic alumi-



No. 1 and 2 machine room, Port Alfred Pulp & Paper Corporation, Port Alfred, Quebec

num of a high degree of purity by an electrolytic process. The plant has been designed with a view to the progressive installation of a number of units, each having a productive capacity of 150,000 pounds of metal a day. At the present time, only part of one unit is in operation, the output being some 120,000 lbs. The power is supplied by the Ile Maligne power house, but work is about to be started on the 800,000-horse-power plant at Chute à Caron, where the whole flow of the Saguenay River will be utilized under a head of 210 feet.

Entertainment was provided that evening, in the form of a series of boxing bouts, which would have done credit to the program of a sporting club of any large city.

Motors to Chicoutimi and Port Alfred

After having taken care of the Section for two days, Price Bros. arranged for a fleet of motor cars to take the party to Chicoutimi and Port Alfred. Perhaps the most striking feature of the plant of the Quebec Pulp and Paper Mills, at Chicoutimi, is the foundry and machine shop, in which much of the machinery used in the mill is constructed, including even grinders and electric locomotives.

Twelve miles away is the Port Alfred Pulp and Paper Corporation's mill. When acquired by the Corporation, the mill was producing only high-grade easy-bleaching sulphite. A groundwood mill and a paper mill were constructed and the sulphite mill was extended, and at the present time the company has a rated capacity of 430 tons of news print and considerable easy-bleaching sulphite for which it finds a ready market. A feature of this mill on which many of the visitors voiced favorable comment is the exceptionally fine atmospheric condition and absence of fog prevalent in the paper machine room.

An hour's motor ride over a good road brought the party to the Portage des Roches camp of the Chicoutimi Pulp Co., situated at the dam erected by the Quebec Streams Commission to hold back the waters of Lake Kenogami. The completion of this dam, by regulating the flow of the Chicoutimi river, enables the Kenogami mill to operate continuously throughout the year, whereas it previously had to shut down for several months during the winter for lack of water. The Section were the hosts of the company for supper, which was follow by songs and stories until it was time to return to the sleepers at Chicoutimi.

The next morning, the "Cape Diamond," which was to have brought back the party to Quebec, was delayed for several hours. It happened that Friday was St. Jean-Baptiste day, the national feast of the French-Canadians, for which occasion an elaborate procession had been organized. Some exceptionally fine floats, both as regards design and construction, were seen, which one would hardly have expected to see in such a small and remote town.

The boat trip down the Saguenay and up the St. Lawrence to Quebec was most enjoyable, and the delay in the start was not an unmixed evil. As the boat arrived in Quebec too late to make train connection for western points, a number of members stayed in Quebec over Saturday and motored out to Beaupre, where they visited the mill of the Ste. Anne Paper Co., which had started to operate just a few days previously.

R. S. Kellogg, secretary of the News Print Service Bureau, New York, has planned a lengthy tour of Pacific Coast paper manufacturing plants which will keep him out in the field from June 28 to September 9. His itinerary includes stop-offs at Chicago, Kansas City, Topeka, Manhattan, Kan.; Denver, Salt Lake City, Utah; San Francisco, Portland, Bend, Ore.; Spokane, Seattle, Vancouver, B. C.; Alaska, Prince Rupert, Jasper, Winnipeg, Pine Falls, Port Arthur, Kapuskasing, Iroquois Falls, Ottawa and Montreal. Mr. Kellogg is accompanied by one of his sons and he has been engaged to address various business and professional organizations during the course of his trip, among others the Kansas State Agricultural College of which he is a graduate.

Layne and Bowler Mfg. Co., makers of Layne vertical centrifugal pumps and Layne well-screens, of Memphis, Tenn., have become incorporated, and their name now appears as Layne & Bowler, Inc.

Fox River Valley Safety Conference

Third Annual Meeting in Sheboygan Marked by Record Attendance

ANOTHER successful safety conference of the Fox River Valley has passed into history. The gathering at Sheboygan, held on Flag Day, June 14, was the third one since the inauguration of the Fox River Valley Safety Conference and probably was a greater success, considering all angles, than any of the previous ones.

This was at least true, from the viewpoint of attendance. While the first gathering held at Green Bay two years ago drew the gratifying attendance of 600, and while that at the meeting in Appleton last year reached the astonishing total of 800, there were at least 1,000 attending the sessions of the conference in Sheboygan.

This conference differed from the Appleton meeting in one particular: instead of holding general sessions for all, with luncheons for separate industrial groups, this year's conference was divided into four sections; and in addition general sessions were held. The special sections were given over to the paper and pulp, the woodworking, the metals and metal working, and the public utilities groups. Each of these sessions was very well attended and real programs of merit were carried out.

One of the big surprises of the convention was the large attendance at the paper and pulp section session. In view of the fact that Sheboygan is not a paper mill town, and even quite removed from the paper manufacturing sections of the state, this was a matter of great satisfaction to the promoters of the conference as well as to the paper and pulp mill representatives themselves. George Burns, representative of the National Safety Council, commented on this situation and praised the paper industry for the lead it has taken in making the world safer for everybody.

Sheboygan Is Fine Hostess

Delegates could hardly have been given a more friendly reception than that accorded them at Sheboygan. The entire city was in festive dress. Everywhere were special banners and signs of welcome for the F. R. V. S. C. This fact and the general display of American flags on account of Flag Day made a fine impression upon the visitors.

Anyone who had not seen much of Sheboygan before was upon leaving thoroughly convinced that it is a busy, prosperous, growing and friendly city. It strikes one as a very fine place in which to live, as the slogan of the "City of Chairs, Cheese, Churches and Children," implies. It is advantageously located on the shore of Lake Michigan, about fifty miles north of Milwaukee. In population it numbers about 37,000. Large industrial establishments, principally those of the woodworking kind, are located here. There are said to be one hundred fifty industrial plants here having a total capital of $25,000,000 and employing about 10,000 persons. It has well paved streets, beautiful residences and fine parks. Most of the inhabitants are of the thrifty Teutonic race.

City officials, the Association of Commerce and enterprising individuals did everything to make the visitors comfortable and to assure them a pleasant and successful gathering. Organizations co-operating in the promotion of the conference were: Sheboygan Association of Commerce, Industrial Commission of Wisconsin, compensation insurance companies, employers and employees of Sheboygan, Appleton, Green Bay, Neenah, Menasha, Kaukauna, Oshkosh, Fond du Lac, Kohler, and Manitowoc, and the following sections of the National Safety Council: Engineering Section, Woodworking Section, Public Utilities Section, Paper and Pulp Section, Metal Section, Power and Press Section, and "On Wisconsin Association."

Paper and Pulp Section

Pulp and paper mill representatives had it very convenient for walking to and from the hotel and the meeting place. The sectional meeting was held in the Rex Theatre, which is just across the street from the Foeste Hotel, where they had their headquarters. The Eagles hall, where the general sessions were held, also was but two blocks from the hotel.

Just as the general attendance at the conference was astonishing, so was that at the paper and pulp meeting. At one time there were as many as 250 persons in the theatre, according to an actual count made by George Burns, representative of the National Safety Council. One hundred fifty had their luncheon together at the Foeste Hotel Tuesday noon. This showing is very gratifying in view of the fact that Sheboygan is quite a distance from the heart of the Fox Valley paper industry and hasn't a paper mill in the city.

Very few changes were made in the program as scheduled. The safety motion picture, entitled "Hindsight Versus Foresight," was not shown at this meeting, but was used in one of the general sessions so that the entire assemblage could have the benefit of the lessons contained in it. This is the paper and pulp section's movie, and most of the paper and pulp delegates present were familiar with it as it had previously been shown in a number of Wisconsin paper mills. It demonstrated all the wrong methods and careless habits in opposition to safety in an industrial plant.

A. C. Remley, general manager of the Patten Paper Co., Appleton, was unable to be present to give his talk on "Habits of Safety on the Paper Machines," hence his place was taken by R. A. Larson, safety director of the same plant.

Larson Gives Interesting Talk

The thing that visitors in a paper mill are usually first impressed with is the size of the paper machines, Mr. Larson said. They are astonished to find that it requires such gigantic machinery to manufacture a thing so small as a sheet of paper. This fact, besides being a source of wonder, he said, is a constant warning to all employees to be forever alert against accidents, for huge machinery means dangerous spots.

Mr. Larson has found that in many plants the rear end is one of the most dangerous places of the paper machine. Often there is not sufficient room for perfect freedom of movement. Besides removing this crowded condition, one of the most important safety measures is to guard the machine properly.

Guards are now installed as a matter of course, but one of the great problems of safety in a paper mill is to keep the guards in place, Mr. Larson pointed out. In his plant, the department heads and sub-foremen are held principally responsible for keeping the guards on. This does not mean, however, that a man who takes a guard off and neglects to put it back is excused when an accident occurs, he said; but the supervisory employees are charged with seeing that the guards are replaced. The replacing is not to be done by the head machine tender, however, but he is required to turn this job over to some one else so that all will cultivate the habit of safety.

Greatest of care must be used when putting on belts with ropes, if this practice is used, as this sometimes results in a serious accident. In washing felts, one must be careful not to get one's arm caught. Leaving soap on the running board of the machine when washing up is an inexcusable practice, he said. Some of the delegates discussing this point related that in their plants no one is allowed to wash up near the machine.

This provoked a discussion of the practice of some employees in a paper machine room to go about barefoot. Some said there were no rules in their plants against working barefoot, but that the practice was indulged in only by a few and consequently few accidents result from it.

W. J. Peacock, personnel director of the Northern Paper Mills, Green Bay, and also chairman of the Paper and Pulp Section of the National Safety Council, presided at this meeting, and related that of sixteen accidents in the machine room of his plant, six were injuries to the feet, and most of these cases were due to going barefoot. This led to the issuance of an order forbidding working barefoot at the Northern. Others stated that some plants even go so far as to demand of their new employees that they first purchase a good pair of water-proof shoes before starting work.

Rachals Talks on Safety in the Yard

"A Program of Safety in the Yard," was the subject of a talk by Otto H. Rachals, foreman of the wood yard at the Northern Paper Mills, Green Bay. He told of the influence of Mr. Peacock upon his attitude toward safety. Largely through the program of safety inspired by Mr. Peacock, his department, considered one of the most dangerous in a paper plant, has been able to establish several long-time perfect safety periods. Before Mr. Rachals became foreman the best record of perfect safety attained by the wood yard was sixty days. Since then the yard went 76 days without a lost-time accident, then operated 108 days up to December without an accident, and again up to April 29 of this year the yard had 112 days of perfect safety. At the time of the Sheboygan Conference, the yard had gone 45 days with the same record of safety.

Safety movements are not for the purpose of establishing a record, however, Mr. Rachals cautioned. The saving of life and limb and of the company's time is worth far more than just the record itself.

As a means of attaining perfect safety and maintaining it as much as possible, the foreman should consider himself the keystone around which the whole safety work must move, he said. He must be an example of safety himself and never dare to do things which might induce others to practice carelessness. He must live safety in every act. This will influence others to cultivate the disposition of safety, so much desired for almost every accident is the result of some one having his mind on something far removed from safety. Presence of mind is one of the first requisites of safety.

Mr. Rachals gave many practical hints on maintaining safety in the wood yard. Keeping the yard clean of refuse is a long step toward prevention of accidents, he stated. He does not permit inexperienced employees to handle pickaroons, he said, but confines them to the men who work on the crane itself.

Boyer Talks on the Wood Room

In introducing C. K. Boyer, superintendent of the Interlake Pulp and Paper Co., Appleton, Chairman Peacock told how Mr. Boyer's subject came to be selected. The two were once discussing the extreme dangers of the wood room in a paper mill. Mr. Boyer considered it the most perilous department in a paper manufacturing plant. After relating all the hazards, he said that the wood room must overcome every handicap and use what means it has to prevent accidents. Thus Mr. Peacock suggested the subject, "The Wood Room Crew Asks No Odds."

The perils of the wood room are the fruit of sheer neglect, he said. It is, first of all, full of heavy machinery in which danger is always lurking. Engineers have little regard for the proper location of wood rooms. Besides, the wood room is usually too small. It is a noisy place where the voice of caution cannot be readily heard. It is also often a place that serves as a dumping spot for junk.

In overcoming these handicaps, Mr. Boyer urged that the wood room employees be encouraged to keep their department clear of all refuse and continually be picking up things in the way. He also urged the free use of paint on the machines. No machine is complete unless it is properly safeguarded. He advised a silver gray or white paint instead of green so that the guards will be easily visible.

"After you have taken care of your guarding," Mr. Boyer continued, "make up your mind that you can put safety across. We are constantly doing the impossible things in home life, social life, and business life, but when we come to a problem of safety, we usually scratch our heads and say that the accident couldn't be prevented.

"Instead of placing the proper blame for the accident, we will say devoutly, 'The Lord willed it.' We hold the Lord responsible for too many things, when as a matter of fact, He is not responsible at all but knows who is to blame and will demand an account from the one who is guilty. I haven't much use for anyone who is always saying, 'It can't be done.'"

Illustrating this point, Mr. Boyer told of the athletic prowess of the old baseball player Honus Wagner in his boyhood home. According to the baseball records, Wagner made more errors than any player in the big leagues, and still he is, in Mr. Boyer's opinion, the greatest fielder in the history of the sport. He made more errors because he went after all of those so-called impossible catches.

A spirited discussion resulted from Mr. Boyer's statement that the Volstead Act has had the beneficent effect of keeping the employees better fit for their jobs. While some persons doubted whether the prohibition laws have reduced drinking among the laboring men to any very great degree, yet many agreed with Mr. Boyer that the former Monday morning "hang-over" of pre-Volstead days is becoming less frequent as time goes on.

The Interlake superintendent declared it a policy of the parent company, the Consolidated Water Power and Paper Co., that it will employ no man whose efficiency is impaired by drink to the extent that he becomes a menace to the safety of his co-workers. The other man's life is too valuable to show any leniency to a drinking man, Mr. Boyer pointed out.

Another policy of the company is to make safety an integral part of the entire operations of the plant. It reasons that no real progress has been made in production unless safety has gone with it.

R. M. Radsch on the Safe Pulp Mill

Beginning with a startling antithesis on the boredom of safety preaching, R. M. Radsch, superintendent of the Thilmany Pulp and Paper Co., Kaukauna, wound up with a happy conclusion on how necessary it is to keep at the safety first preaching everlastingly and that just a mere lull may result fatally.

The biggest nuisance in his own plant is the safety inspector, but he is also one of the most valuable employees, he said. An inspector must of necessity be "nosey," He must never cease prying into the hazards of the plant, whether they be mechanical defects or human carelessness.

Mr. Radsch took his listeners imaginatively through a pulp mill, beginning with the wood yard and showed how necessary it is that every foreman be a good housekeeper, that he be neat and endeavor to keep his department clean. The personal element in safety far outweighs the mechanical safety of any machine or plant.

Address by M. G. Hoyman

An account of the safety measures in force in the Kimberly-Clark Company's mills was given by M. G. Hoyman, staff superintendent of service of the company, Neenah, by way of illustrating his talk on "Placing Responsibility for Accidents."

Nine years ago, he said, the company began issuing safety bulletins, and in order to begin placing responsibility for accidents it published therein the name of the foreman of the respective department in which an accident occurred. This stimulated a desire among the foremen to reduce accidents as much as possible.

Kimberly-Clark Co. has learned that in order to succeed in any safety program it is necessary to make everybody responsible for safety. The company went farther than issuing safety bulletins. It inaugurated safety competition between the different mills and also between departments. It put on safety campaigns and let various groups stage instructive safety programs. Prizes are offered by the company to the mills and departments that distinguish themselves in safety endeavor and cash prizes are also given to the employees of a department establishing a good safety record.

One of the plants, employing 283 people, operated for a period of eleven months with but one lost-time accident, and for this record the employees received $1,400 in five dollar bills as a reward.

So that every new employee will cultivate the safety habit and know what is required of him, he is given a little booklet giving instruction in safe practices. This he is expected to read before starting work.

When an accident occurs the safety council appoints a committee to investigate all the circumstances and make a report recommending remedial measures and placing responsibility for the particular accident.

If there was culpable neglect, the committee will recommend disciplinary measures. The extent of the discipline depends upon the seriousness of the fault. This may be either a reprimand, a one week's lay-off, a two weeks' lay-off, or dismissal from the plant. The safety council holds that it is not fair to the employed force to retain an employee who has culpably been responsible for a serious accident.

When asked whether the company prints these safety rules in foreign languages for the benefit of the alien employees, Mr. Hoyman said that this would retard the Americanization of the foreigners. Publishing circulars in English is a stimulus to learning that language as soon as possible, and the company recommends evening schools for such employees. Usually, he said, there is some one in the home of that employee who is able to read English.

To make certain that no one can offer the weak excuse that he did not receive a booklet, he is upon being presented with one required to sign a receipt for the same. He is also asked whether or not he read the book.

With reference to Americanization as a means of educating foreign employees in the habits of safety, some of the delegates at this meeting declared that certain plants require their foreign employees to learn the English within a certain time or suffer the loss of their jobs.

George Burns Talks on the Contest

George Burns praised the paper mill representatives for their large attendance at this conference and said that the Wisconsin paper mills have given the other states an excellent example of safety endeavor. The paper and pulp industry has been a real pioneer in the safety movement, and has been a great help to similar effort in other industries, he said.

While the National Safety Council believes it is doing good work, the greatest credit for stimulating competitive safety efforts in paper mills should go to The Paper Industry magazine, of Chicago, he said, which offered the grand prize for the finest safety record in paper mills, Mr. Burns declared.

The speaker was not privileged to relate the details of the progress of this year's safety contest, as this might lead to the identity of the winning paper mill. He gave out this information, however, that a Wisconsin mill had a commanding lead both in the A group contest and in the contest for the grand prize. Small silver cups will go to the winners of the three groups and the Paper Industry's large cup constitutes the grand prize.

The growing interest in the contest is indicated from the increase in participating mills. The first year, when the contest was put on for one month only, there were forty-one mills enrolled. The second year, which was last year, there were 72 mills taking part. This year, however, the list of contestants on Jan. 1 was 119. An average of 115 mills have participated this year. These employ 37,600 persons. In these mills there had during the first four months of the contest been nine deaths, eleven accidents resulting in permanent and total disability, 1,126 resulting in temporary disability, and a total of 23,266 days lost. During the last seven years the average death rate in the paper and pulp mills has been twenty-two per year. This would seem to make this year's death rate a trifle high. But the number of accidents is quite a good deal below average.

Mr. Burns gave the encouraging information that a Wisconsin mill might again win the grand prize this year. Last year it was won by the Neenah mill of the Kimberly-Clark Company. There were on May 1 of this year also a number of Wisconsin mills near the top in the Class C group, he said.

New Forestry School Gift of Southern Lumber Co.

On Saturday, July 2nd, the permanent Forest School buildings located on the 1,000 acre tract of forest land donated by the Great Southern Lumber Co. to the Louisiana State University was formally dedicated.

President Emeritus of the University, Colonel Thos. D. Boyd, Colonel W. H. Sullivan, vice-president and general manager of the Great Southern Lumber Co., and Mayor of the City of Bogalusa, and Major E. W. Kelly, United States Forester of the United States Forest Service, Washington, D. C., were speakers.

The land contains most of the types of forest conditions found in the South—bottomland hardwoods, slash, loblolly, longleaf and shortleaf pine. Some of it contains good reproduction, and some of it is without reproduction which will be planted. Practically all of it is fenced. A part is used as an experimental plot by the United States Forest Service. It lies adjacent to extensive plantings of the Great Southern Lumber Co., the largest private forest practitioner in the country.

The students of this school have access not only to the extensive forests of the Great Southern Lumber Co., but to the industrial plants of Bogalusa as well. Here forest products are manufactured into lumber, paper, navel stores, paper bags, boxes and furniture. Here at Bogalusa the practical application of forest utilization can be made a part of the study course. The location of this Forest School is easily accessible to all the southern states, and being located in Louisiana, has the advantage of her progressive forest laws, such that the actual practice of growing trees on forest lands may be carried on with a promise.

The time has arrived in the South when there should be and will be developed a Forest School second to none in America. The Louisiana State University Forest School proposes to develop just such a school, and to train foresters not only to know how trees grow, but to know how to grow trees.

The University has just completed a large camp building 32 ft. x 64 ft. well constructed, containing a large classroom, mess hall, office, dormitory, kitchen, shower baths and electric lights; also keeper's home and a cottage for the faculty.

Research Work on Southern Timber

No forest region in the United States presents more complex research problems than the Southern Appalachians and the surrounding lowlands, which comprise the territory covered by the Appalachian Forest Experiment Station. This fact is clearly brought out by a reading of the annual investigative report of this station, copy of which has just been received by the Woodlands Section of the American Paper and Pulp Association.

Prior to the establishment of the Appalachian Exepriment Station at Asheville, North Carolina, this region had been somewhat neglected by research agencies and the personnel of the station has had to spend more time in laying the foundation of specific studies than was necessary in some other regions. The report just issued indicates that much of this essential groundwork has been done and that the station is now in a position to devote its energies to specific problems of most interest to the pulp and paper and other wood-using industries.

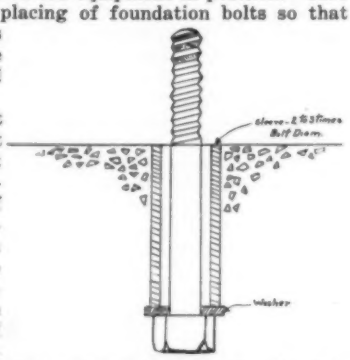
Of particular interest to the pulp and paper industry is the proposed study of the reproduction, growth and management of cut-over loblolly pine lands. The loblolly pine is an important pulpwood species for many mills, and it is to be hoped the station will have sufficient funds to push this project to a rapid conclusion.

Director Frothingham's recommendation for a specialist in forest utilization as a permanent member of the station's staff is one which will meet with the hearty endorsement of the pulp and paper industry because of the complex nature of the southern hardwood stands, which make integration of the various wood-using industries seem the only solution of many of its forest management problems. The station also has a number of other projects under way which are of value to the consumer of pulpwood.

Practical Helps for the Mill Man

Placing Foundation Bolts in Concrete

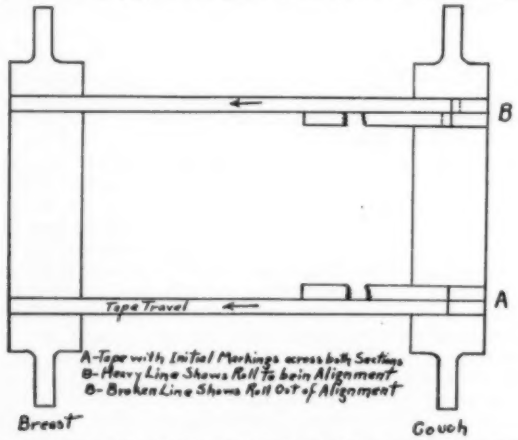
MUCH of the equipment used in a pulp and paper mill is supported on concrete bases. Foundation bolts embedded in concrete are used to hold the equipment in position. Care should be taken in the placing of foundation bolts so that the position of the bolts will conform with the bolt holes of the bed plate of the machine.



Such bolts may be set in a number of different ways, but one way that has been found very satisfactory makes use of the bolts, a set of washers, and a short section of pipe for each bolt. The pipe should be of approximately two to three times the diameter of the bolt, while the washer should be sufficiently large to extend slightly over the outside diameter of the pipe. With the head of the bolt in position, the washer is slipped on, and then the short section of pipe just sufficiently long to reach the surface of the concrete. With the concrete poured and partially set, it is possible to move the bolt slightly, thus permitting very easy adjustment of the bolt to conform with slight variations in the bolt openings of the equipment bed plate, after the concrete has hardened.

Simple Way to Check Roll Alignment

OFTENTIMES in the operation of a paper machine or other equipment in a paper mill, it is necessary to check some major part or parts of the machine for alignment. A paper machine erecting engineer recently suggested that any set of rolls could be easily checked for alignment with a steel tape. For example, if a bottom couch roll were being checked

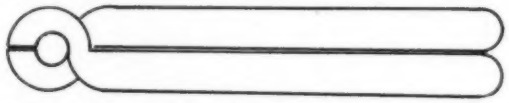


for alignment with the breast roll of the machine, it would simply be necessary to extend tape from one end of the couch roll over the table rolls, around the breast roll and wire carrying rolls of the fourdrinier part following the same path as the wire, see-sawing the tape to make it taut throughout its entire travel, and laying it flat on the couch roll, side by side with the starting portion of the tape.

With a straight edge and marker, a line is drawn across both sections of the tape. Then the tape is removed and placed on the opposite side of the machine in the same relative position on the rolls and the process repeated. If the lines placed on the two sections of tape during the first measurement now coincide, the rolls are properly aligned; if not, it will be necessary to make required adjustment.

Tong for Pulling Fuses

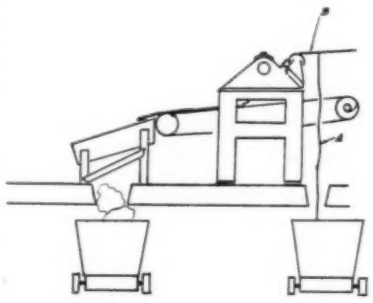
THERE is a definite hazard in changing big fuses. A chief electrician worked out the sketched device to protect his workmen as far as possible. The device shows a pair



of tongs made from five-eighths inch fibre. They are about two feet long and proportionately designed. The tongs part is placed around the fuse and a healthy pull on the handles gets the fuse out without any danger to the workman.

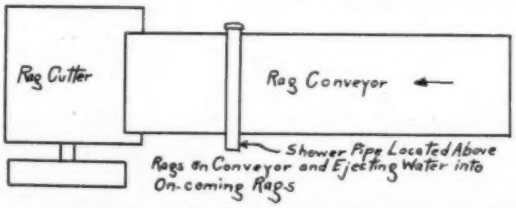
Keeping Broke from Cutters Clean

THE superintendent in a mill in which cleanliness in the paper means everything believes in taking precautions rather than trusting entirely to the screening system. One point on which he insists is that all broke which is to be used over again be kept off of the floor in the cutter room. The sketch diagrams roughly his layout at the cutter. There is a hole in the floor which takes care of the shaving (A) as it comes away from the sheet at (B). Another hole in the floor takes care of the sheets which the girls catching sheets or watching the layboy, cull out. Trucks in the basement care for this stuff as it comes down. In this way the floor dirt is kept out of the broke and it goes to the pulper clean.



Eliminating Dust in Rag Room

A SUPERINTENDENT of a roofing felt plant was continually annoyed by the large amount of dust in the rag room of the mill, the dust being caused largely from the action



of the rag cutters on the dry rags. The rags were fed to the cutters on a horizontal conveyor, and to eliminate the dust problem, he simply placed a short section of shower pipe across the conveyor and ahead of the duster where it was possible to sprinkle the rags and thus lay the dust before passing through the machine.

The Hawkeye Paper Stock Co., of Sioux City, Ia., has been incorporated with $15,000 capital to engage in the general paper business, wholesale and retail. M. Barrick is president and secretary, and J. F. Scharles, vice president and treasurer.

The Michigan Safety Congress

Paper and Pulp Meeting Characterized by Interesting Discussions

IT WAS eminently fitting that the Michigan Industrial Safety Congress held under the auspices of the State Department of Labor and Industry, should be held at the University of Michigan at Ann Arbor. Taking for its keynote the thought that individuals must be educated to safety and safety work the campus of a large university provided just the correct setting for such a scene as this. Here were men and women gathered together from all over the State to exchange ideas and opinions—to gain a new viewpoint of their work—truly "students" of this great work of safety.

The meeting was one of the largest of its kind ever held in the State of Michigan, and from the point of view of enthusiam probably the most successful. The general sessions were all well attended by enthusiastic delegates. It was in the sectional meetings, however, that the most valuable talks and discussions came to light, for it was after all to attend these meetings that most of the delegates came to the congress.

The Pulp and Paper Section

The Paper and Pulp Section met in Angell Hall, Room 1020, on Wednesday, June 29, at 2:00 P. M.. The meeting was opened by Chairman E. W. Kiefer, president of Port Huron Sulphite & Paper Co., Port Huron, Mich. After a few short introductory remarks, Chairman Kiefer introduced the first speaker on the program, Mr. Ralph Hayward, Manager of the Kalamazoo Vegetable Parchment Co., Kalamazoo.

In his opening remarks, Mr. Hayward said that the fact that the State Department of Labor and Industry had called such a meeting was a fine indication of progress. It meant closer co-operation between the State, the employer and the employee, and the results would be far reaching.

He then went on to say that the cheapest and most effective method for lowering accidents was to locate the source of accidents and to correct the fundamental causes. It was his opinion that the greatest waste in any mill was due to accidents resulting from carelessness. In his company, he said, all accidents were classed under one heading; that is, accidents where individuals were injured, and accidents resulting in only property losses. It was found after analyzation that for every one personal injury accident, there are at least ten non-injury accidents or property accidents. He further stated that if paper mills could reduce their accidents 50 per cent, they could pay dividends.

Accident Causes Depicted in Graphs—His company are of the opinion that the fundamental causes for accidents lie with the men themselves more than with machinery or equipment. If a man is tired and fatigued, or is worried over financial conditions or conditions at home, accidents are bound to occur. To bear this out he showed three graphs depicting a record which his personnel department had kept of the exact time when the most accidents occurred, over a period of a year.

The first graph was an hourly record. It showed that during the first hour of the morning accidents were comparatively few. The second hour they slightly increased. The third hour accidents reached the highest peak, and dropped off to almost nothing the last hour. In the afternoon the story was the same—the first hour low, the second slightly increased, the third the peak and the last hour dropping down again.

This showed that when the men first started work in the morning they were fresh, but as the morning wore on they grew more tired, and their resistance weakened and more accidents happened. In the afternoon, after a rest at lunch, the results were the same.

The second graph was a daily record. It showed that on Monday accidents were fairly high. On Tuesday and Wednesday they showed a steady decrease, while on Thursday they jumped again and hit the highest peak of the week, gradually dropping off again on Friday and Saturday.

Mr. Hayward said that they accounted for this by the fact that on Monday the men were tired out from the holiday over Saturday and Sunday, and consequently accidents were fairly high. On Tuesday and Wednesday they were more rested and accidents were fewer. In his mill, he said, Wednesday is payday and as the natural tendency for workers is to go on a spending "spree" on payday, the men were in poor condition for work on Thursday and the result was that accidents were highest on that day.

The third graph was by months. It showed that the most accidents occurred during the months of June, July, August and September—the hot months of the year. This was attributed to the fact that during the warm summer months the men received less rest than in the cold months and as a result accidents were higher during the warm months.

These graphs very clearly illustrated that the fundamental causes for accidents rest with the men—on their mental and physical condition. If a man is in poor health or is tired, his resistance is lessened and he cannot guard against an accident so well as if he were rested and alert. To correct it, the Kalamazoo Vegetable Parchment Company had instructed their superintendents and foremen that the supervision must be more strict during the peak hours, days and months showed by the graphs. It was thought that if the superintendents and foremen were in the mill with the men at those hours they could guard more against accidents.

Maintenance of Men—As a further aid, Mr. Hayward said that a Department of Maintenance of Men had been instituted. This department consisted of a doctor, a nurse, a minister, physical director, personnel manager and safety director. Its function is to attempt to help the men outside of working hours in their financial, physical and home conditions. It was not necessarily to pry into the men's affairs, but to help them wherever possible.

Mr. Hayward said that since this plan had been in effect accidents had been reduced 50 per cent, and if the results kept up for the balance of this year the company would save about $7000.

Safety Education in the Paper Industry

Chairman Kiefer then introduced the next speaker, Mr. E. W. Valliere of the Michigan Mutual Liability Co., Detroit, whose subject was, "Safety Education in the Paper Industry." In his talk, Mr. Valliere divided the paper mill into departments and gave some of the chief causes for accidents, and their cures, which his company had found in their work.

Mr. Valliere concluded his talk by suggesting a weekly inspection of each department by the foreman and the safety engineer, and advocated the use of posters and motion picture films to further the work of safety in the mill.

Helping the Individual

Mrs. Maude Young, Safety Directress of the Kalamazoo Paper Co., Kalamazoo, then led a general discussion on what could be done to help the individual man outside of the mill. She spoke of experiencing considerable trouble with the men's feet in her company and wondered if not wearing proper shoes or no shoes at all had anything to do with it. This brought on another lively discussion on the question of compelling the men to wear shoes which ended in taking a vote on whether or not the men in the mills should be required to wear shoes. The vote was very decisively that the men should not.

Mrs. Young then asked for opinions on the best methods.

for safety instruction in the mill. Mr. Hayward said that his company had once published a house organ containing a number of safety notes and articles but had discontinued it in favor of a small two-sheet folder with a few lines printed on it which was inserted in the pay envelopes. Mrs. Young said that at the Kalamazoo Paper Co. they had experimented and found that the best method for teaching safety is individually and that they had almost given up group meetings. The individual could be more carefully instructed than a group.

Mr. Redmond then said that he believed that the foreman in each department should be held responsible for properly instructing his men in careful handling of machines and equipment. He said he had found this would bring better results. This was also Mr. Hayward's and Mr. Kiefer's opinion.

There then followed a lengthy discussion on medical examinations and their value and purpose in the paper mill, and on compensation insurance.

Meeting Concluded with Vote of Opinion

Chairman Kiefer in summing up said that all speakers had stressed one point; namely, that safety work must start with individuals and not with machines or equipment. He then asked that the following expression of opinion be voted upon and the result submitted to the general committee: "Resolved, that the concensus of opinion of the Paper and Pulp Section is that the greatest opportunity for promoting safety lies in the educational work among individuals in the plant rather than concentration on mechanical equipment." The motion was made by Mr. Hayward and seconded by Mr. Redmond. The vote was unanimously in favor of such an expression.

With no further business on hand, the motion was then made to adjourn.

In the wood yard, most accidents resulted from careless handling of tools and from imperfect or defective tools. Men should be instructed in the proper method of handling of tools and the tools themselves should be inspected daily and defective ones thrown out.

In the digester room, the greatest hazard was in the handling of high pressure steam. If the men were taught properly to handle steam when they first started work in the mill, fewer accidents would result.

Too often in the beater room, the proper type of trucks were not provided to handle stock. Also bales of raw stock carelessly piled were responsible for numbers of accidents.

Bare Feet in Machine Rooms Discussed—In the machine room, Mr. Valliere said, numbers of accidents were caused by the men going barefooted and slipping on the wet floors or picking up nails or other things in their feet. He said that for a long time he had been fighting to get the mills to force their men to wear shoes. There was a lively discussion on this point.

Mr. Hayward gave it as his opinion that paper makers worked better in bare feet than in shoes or boots, and as for their running nails or other things in their feet he hasn't ever known, in his mill, of an accident due to a man going barefooted. Mr. Kiefer thought that due to the peculiar conditions existing in a paper mill, the less clothes bothering a man the better workman he would be. In his mill, he said, they had never known of an accident due to bare feet. Mr. Redmond, of the Kalamazoo Paper Company, said that while he would like to see his men wear shoes, he didn't think it was possible to compel them to do so.

Banquet

The banquet on Wednesday evening, June 29, was held in the Ballroom of the Michigan Union, on the campus of the university. Col. John G. Emery, Past National Commander, American Legion, Grand Rapids, acted as toastmaster.

The speakers on the program were Chas. E. Hill, vice president of the National Safety Council, and safety director of the New York Central Railroad, Eugene J. Brock, chairman of the State Commission of Labor and Industry and the Honorable Fred W. Green, Governor of Michigan.

Governor Green, in his remarks, said that the people of the State and the government itself were greatly interested in safety work, and were watching this meeting with a great deal of interest. He said that it was a wonderful thing that all industries could meet on a common humanitarian ground. He then spoke of safety work as being in its comparitive infancy and what a great opportunity was open before safety workers.

Attendance at Paper & Pulp Section

Those in attendance at the Paper and Pulp Section were: J. L. Bronson, Consolidated Paper Co., Monroe; J. N. Freeman, River Raisin Paper Co., Monroe; Miss M. Trafford, Kalamazoo Vegetable Parchment Co., Kalamazoo; R. Hayward, Kalamazoo Vegetable Parchment Co., Kalamazoo; Mrs. Maude Young, Kalamazoo Paper Co., Kalamazoo; M. Redmond, Kalamazoo Paper Co., Kalamazoo; T. R. Walter, Kalamazoo Paper Co., Kalamazoo; J. A. Purdy, Michigan Mutual Liability Co., Detroit; E. W. Valliere, Michigan Mutual Liability Co., Detroit; W. C. Henry, Eagle Ottawa Leather Co., Grand Haven; R. Rehm, Western Paper Makers Chemical Co., Kalamazoo; J. B. Hastings, Port Huron Sulphite Paper Co., Port Huron; E. W. Kiefer, Port Huron Sulphite Paper Co., Port Huron; H. C. Jones, Central Paper Co., Muskegon; H. E. Mottram, The Paper Industry.

Vulcanized and Parchmentized Fibers

A RECENT United States patent (1,631,750) covers a method of incorporating cellulose acetate with paper and rag pulp to produce a hard, durable, compact waterproof paper that is relatively inexpensive to manufacture. Solid cellulose acetate is added to the fibers in the beater, together with filling, sizing and dyeing compounds. The cellulose acetate is ground up by the action of the roll on the bedplate presumably, and dispersed throughout the furnish. In the proportion of 10 to 15 per cent a waterproof paper is produced which is described as "somewhat flexible," while a product containing about 50 per cent of the cellulose acetate resembles vulcanized fiber, being hard, compact and mechanically strong.

The paper is processed in the usual manner. After it has left the fourdrinier it is ready to be vulcanized. The sheets are placed between the heated platens of a suitable press and subjected to a pressure of 1,000 lbs. per square inch at a temperature of 125 lbs. of steam. This heat and pressure are maintained for a time sufficient to cause the cellulose ester to fuse throughout the fibrous mass and to flow completely over the surface, forming a continuous coating.

The paper sheets containing the cellulose acetate, after they leave the fourdrinier machine, may be parchmentized in the usual manner, by a bath of 70 to 72° Baumé zinc chloride at a temperature of 100 to 125° F.

The parchmentizing agent is freed from the sheet by leaching in a succession of water baths, and the parchmentized sheet afterward vulcanized by heat and pressure, or immersed in a solvent for the cellulose acetate, such as acetone. Upon evaporation of the solvent, a water-resistant fibrous sheet impregnated with cellulose acetate results.

Vulcanized fibrous sheets, made as described, are said to furnish material from which machine elements such as gears, pulleys, or the like, may be formed or machined, and also as an electrical insulator, in the construction of switchboards for radio apparatus. It is also said to be applicable for the surface veneering of wood or cardboard.

Personnel Changes at Lincoln Electric

L. P. Henderson, formerly with Detroit office of Lincoln Electric Co., Cleveland, has been transferred to Chicago in charge of welder service.

J. E. Durstine has gone from the Experimental Engineering Dept., to Welder Service Dept., at Cleveland.

J. W. Shugars of Time Studay Dept., and R. D. Layman also of Cleveland, have gone to Detroit under direction of J. M. Robinson.

D. H. Carver has been transferred from Cleveland to Cincinnati, and R. F. Terrill to the Eastern Service Division in New York City.

The Month at Washington

ALL indications now point to a special session of Congress about October 1st in advance of the regular session of the 70th Congress, to consider important legislative problems confronting the nation, including flood legislation, tax reduction, the deficiency bill and other important national problems.

New Trade Practice Rules—Revision of the Federal Trade Commission Act to give the Commission authority to pass on certain trade practices in an advisory way, is recommended by the Chairman of the Commission, C. W. Hunt, and such recommendations will undoubtedly be made to the next Congress. The object is to advise with those violating trade practices rather than subjecting them to prosecution for law violations without warning, since the functions of the commission are remedial and not punitive, being aimed rather at protecting the public than to punish offenders, and Congress never intended the Commission to be a persecutor of business, Mr. Hunt claims. The Commission only fines the sharp trader who makes capital by using misbranding, false advertising, misrepresentation and disparagement of competitive products with immunity, and steps in to protect the public.

Drive to Buy Home Products—Senator Edwards of New Jersey expects to introduce a bill in the next Congress to the effect that purchases should be made of American products and materials to avoid encouragement of foreign materials in competition with American commerce, especially in purchases by the Government. Congressman Wood of Indiana at the last session offered a bill whereby all Government contracts on national, state and municipal construction and furnishings, would specify American materials. Representative Connolly of Philadelphia has sought to interest President Coolidge in issuing an Executive Order giving preference to domestic products in the letting of all governmental contracts. The American Tariff League and numerous trade bodies are behind this movement, which will, no doubt, be brought to a head at the next session.

Revision of Tariff—Revision of the tariff to afford relief for American industry from the "increasing importation of foreign-made goods" is likely to be considered at the coming 70th Congress, according to Congressman Wood.

World Benefits from Trade Meeting—The International Economic Conference at Geneva, which came to a close July 2d, accomplished definite results on a varied range of subjects which point the way to better international trade relations, removing many trade barriers upon foreign commerce and uniform tariffs applied to goods coming from different countries without discrimination. Business leaders from 43 nations gathered for the conference. Strict adherence to the principle of unconditional not-favored nation treatment, importance of free movement of raw materials and dangers in excessive and discriminating export duties, were among the points emphasized and made the subject of recommendations. Bills of exchange, cheque and commercial credits, highway and air transport, documentary credits, double taxation, bills of lading, rules of arbitration, international settlements, international telephony, etc., were also discussed.

Recent Income Tax Rulings—Premiums paid upon a policy of insurance issued upon the life of a taxpayer are not proper items of business expense allowable as deductions from taxable income, says the U. S. District Court in Rieck vs. Heiner (No. 3555). The plaintiff paid $8,278.40 as an insurance premium on a certain policy taken out on his life on the ordinary life plan and payable to his estate, which he endorsed over to the bank as collateral security for a loan. The court held this not deductible from income, and as not a proper item of business expense, even though the policy was made payable to his estate, and the fact that the policy was assigned to the bank as collateral security for the repayment of the loans did not change the status.

No loss is recognized from the trading in of trucks and passenger cars used for business purposes, on new trucks and passenger cars to be used for like purposes, according to another ruling (I. T. 2356).

Article 634, Regulations 62, of the Bureau have been amended by Treasury Decision (T. D. 4023), for the purpose of advising the Treasury of changes in ownership of affiliated corporations in the taxable year, and requiring the filing of consolidated returns by the parent company.

Contributions to a so-called "pension fund," created to procure and retain desirable employees, may be deducted as an ordinary and necessary business expense, according to the Board of Tax Appeals (No. 2467).

Reorganization of Customs Service—Members of the House Committee on Ways & Means are considering organization of the Customs Service before the convening of the 70th Congress, particularly with reference to the customs laws.

Decisions on Mark Requiring Country of Origin—Twenty-three decisions under the stamping law, relative to marking the country of origin on imported goods, have been handed down by the U. S. Customs Court recently, and in several cases the court ruled that markings with the names of cities abroad, or markings on the wrappers, were insufficient to comply with the law. Certain rolls of wrapping paper, imported by O. G. Hempstead & Sons of Philadelphia, were required by the collector to be marked on the packages, but not on the sheets, and 10 per cent extra duty imposed for want of such marking. The court held that "the law requires the paper to be marked, if capable of being marked without injury, and we have frequently held that such paper is capable of being marked. The paper itself, the article of commerce, should have been marked on the rolls and not on the outside package. As this was not done, we overrule the protest."

Pulping Qualities of American Woods—A new publication intended to aid in the conscription of other woods to take the place of the rapidly diminishing "old guard" of paper making—fir, spruce and hemlock—is Department of Agriculture Bulletin No. 1485-D, "The Suitability of American Woods for Paper Pulp," just issued. At present 77 per cent of the wood consumed by the paper industry is spruce, fir, and hemlock, with spruce alone contributing 55 per cent.

Other Customs Decisions—A decision has just been handed down involving the correct tariff treatment of standard newsprint paper imported by F. W. Myers & Co., holding that newsprint containing 80 per cent mechanically ground wood pulp and 20 per cent sulphate, is free of duty under par. 1672, as standard newsprint paper. The collector assessed it at ¼ of 1 cent per pound and 10 per cent ad valorem under par. 1301, as printing paper not specially provided for. (142783-G-523) NY.

Old cotton rags fit only for paper stock, are duty free, the court holds in a protest of the American Shipping Co., of Chicago, as against the collector's assessment of 10 per cent (No. 123475-G-72049). A similar ruling is made on certain bale of rags, invoiced and entered as paper stock, by F. B. Vandegrift of Philadelphia, held duty free under par. 1651, as against the collector's assessment of 10 per cent under par. 1457 (129839-G-69184).

Containers of tea composed of paper, imported by Chase

& Sanborn of Chicago, were assessed at 35 per cent under par. 1313 as manufactures of paper and on protest the court overruled same. (63943-G-68139 and 56378-G-67610)

The court held that hanging paper, not printed, lithographed, dyed or colored, is dutiable at 10 per cent under par. 1309, sustaining protests of J. G. Praeger Co. and A. W. Fenton, Inc., as against the collector's assessment of 1¾ cents per pound and 20 per cent ad valorem. (49549-G-6342-24,11470-G-27457-25) NY.

New Trade Commission Ruling—The Federal Trade Commission has just inaugurated a change in policy by which business concerns in future will be permitted to state their side of the case to the commission before a complaint is actually issued. The hearing is for the purpose of showing why a complaint should not issue, and maybe informal in character, and does not involve the taking of testimony. Statements of fact or of law may be made, as desired. Three weeks notice is to be given of the time and place of such hearing.

Interstate Commerce Commission Rulings—In the case of the International Paper Co. vs Boston & Maine R. R., (No. 16841), the commission found the rates on imported wood pulp in carloads from Boston to Fort Edward, N. Y., unreasonable, prescribed a reasonable rate and awarded reparation.

By an order just entered in Investigation & Suspension Docket No. 2927, the commission suspended from June 10, 1927 to Jan. 10, 1928, the operation of certain schedules as published in Supplement No. 20 to Canadian National Railways (lines Westford, Ont., Armstrong, Ont., and east thereof), tariff I. C. C. No. E 97. The suspended schedules propose to cancel the proportional commodity rates on wood pulp and wood pulp screenings, carloads, from pointes in Eastern Canada to Kewaunee, Wis.

In Iroquois Pulp & Paper Co. vs Ann Arbor R. R. Co. (No. 16389), the rates on blank wall paper, in carloads, from Thomson, N. Y., to destinations in central territory, were found not unreasonable or otherwise unlawful, while rates on newsprint paper, in carloads, from and to the same points, were found umreasonable to the extent that they exceeded the rates on blank wall paper. Reasonable rates were prescribed for the future.

Complaints filed with the Commission include United Paperboard Co vs Central Vermont R. R. (No. 19714), seeking reasonable rates on import wood pulp, New York to Wabash, Inc., and claiming reparation; No. 19703, St Regis Paper Co. vs Ann Arbor R. R., seeking establishment of reasonable rates on wrapping paper from Carthage, N. Y., to destinations in western and southern states, and claiming reparation; No. 19692, Taggart Bros. Co., vs A. T. & S. F. Rwy., requesting reasonable rates on paper bags from Watertown and Carthage, N. Y., to destinations in Pa., O., W. Va., Mich. and other states; No. 19694, St. Regis Paper Co. vs A. T. P. & S. F. Rwy., requesting reasonable rates on newsprint paper from points in N. Y., to destinations in Pa., Ill., Ind., O., Mich., Mo., Ky., and W. Va.

Distribution Census—The Domestic Distribution Department of the U. S. Chamber of Commerce at Washington has published at its own expense advance figures of the census of sales of commodities secured by the U. S. Bureau of Census, and copies may be obtained upon application at 25c each. This monograph gives the total number of establishments engaged in the sale of paper and paper goods, both at retail and wholesale, salaries and wages, number of employees, etc. Figures from the Census Bureau will not be available before September.

Papers Sized with Glue Preparations—The Bureau of Standards has been experimenting with highly finished paper, with a view to gathering data on paper which had been sized with glue finishings. The results of these experiments and of glue on coated paper are available upon application to the Bureau. Technologic Paper No. 323. The growing interest among manufacturers and consumers in the subject of paper permanency and in improvement of the strength and printing qualities of paper, led to a co-operative study by the Bureau, the Bureau of Efficiency, and the National Association of Glue Manufacturers.

Merits of Lime and Magnesium in Acid Making

A reader of THE PAPER INDUSTRY has favored us with a comment on the report of the symposium on lime and acid making published in the May issue on page 258. In this report, Professor Schwalbe is quoted as favoring a magnesium base in preference to a calcium base for the manufacture of sulphite acid. Our correspondent calls attention to the translation of an article by Dr. J. Hausen on "Neutral and Alkaline Sulphite Cooking" in THE PAPER INDUSTRY for February, 1927, p. 1914a, where the experiments of Cross and Engelstad are cited and show that calcium is superior to magnesium as a base in sulphite acid. The translation referred to reads as follows:

> "Upon the addition of equivalent amounts of ammonia, soda, lime, or magnesia, maintaining all other conditions constant, the favorable effect of the bases upon cooking occurred in the following order: The yield with magnesia was lowest, being 30 per cent (on the original weight of the wood). With lime it was 35 per cent, with ammonia and soda it reached nearly 50 per cent. The degree of cooking, obtained by determining the amount uncooked, gave relative results. After 24 hours' cooking at 110 degrees, with a solution of 5 per cent SO_2, with the addition of 2.5 grams ammonia per liter and respectively equivalent amounts of soda, lime and magnesia, the uncooked portions were:
>
> With ammonia ..... 1.3 per cent
> With soda ..... 5.2 per cent
> With lime ..... 9.6 per cent
> With magnesia .....21.6 per cent
>
> All based on original weight of wood.
>
> "In these preceding experimental results appears for the first time, in my opinion, an exact experimental account of the specific action of the various bases in the sulphite process. It shows that ammonia has, by far, the strongest action and that lime as base acts more desirably than magnesia."

Our correspondent reminds us that this question has been brought up time and time again in THE PAPER INDUSTRY. Thinking readers are, he says, entitled to have these facts, which are based on highly scientific investigations, called to their attention as against opinions of other authorities.

In regard to the statement that there is no magnesium stone in Europe our correspondent denies its accuracy, saying that he has it from a man who knows every sulphite mill over there and the geology of the different countries, that there are deposits of magnesium available in different parts of Europe.

Mention is made of an error in Mr. Paulson's statistics. Mr. Paulson said there were seventy-three sulphite mills in the United States of which twenty-eight use milk of lime. The fact is that there are ninety-three mills of which twenty-eight use milk of lime. It may also be of interest to know that out of the forty-five sulphite mills in Canada, only seven use the milk of lime system for acid making.

Member of Forest Products Lab. Resigns

Vance P. Edwardes, who has been in charge of commercial contracts of the federal laboratory's recent promotional work on white water recovery and waste sulphite liquor disposal, since 1924, resigns, effective July 1, from the staff, to join the Northwestern Pulp and Paper Co., of Astoria, Ore., as mill manager.

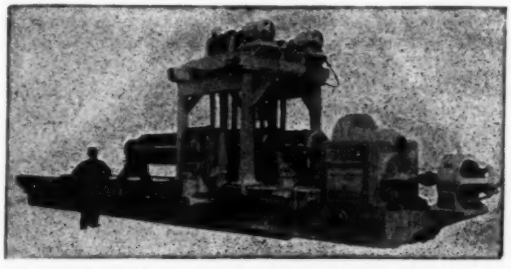
With the Northwestern company he will be in charge of a 110-ton sulphite plant operating entirely on hemlock sawmill waste. This position is not his first in the Northwest, as he was formerly with the Crown-Willamette Co., in Oregon City from 1911 to 1915.

J. V. N. Dorr, president of The Dorr Company, New York City, had the degree of Doctor of Science conferred upon him by Rutgers University recently in consideration of the important contributions he has made to the metallurgical and chemical industries. To collaborate with his associates abroad, Dr. Dorr is now in Europe.

Two-Wheel Roll Grinder Has New Crowning Device

The Farrell Foundry and Machine Co., of Ansonia, Conn., has designed a new 36" two-wheel grinder for quick accurate grinding of rolls not over 36" in diameter, that has a new crowning device by means of which a perfect crown is obtained without using any cut and try method. This device, in addition to being accurate, can be set in a few moments.

The carriage is run to the center of the roll, two nuts are loosened and the scale turned to the desired crown. The nuts



are then tightened, a clutch thrown in and the crowning operation is started. The action of the crowning device is perfected by means of a cam acting through lifting rods. The back of the wheel head is raised and lowered and the grinding head pivoted in front of the wheel head. Thus the wheels are moved to and from the center of the roll and produce a perfect crown. Concaving is also accomplished accurately and quickly with this device. If straight grinding is desired the entire device may be disengaged by merely throwing a clutch.

The grinding is performed by two grinding wheels on opposite sides of the roll. They are mounted on the swing rest principle to compensate for any inaccuracies of the ways. Each grinding wheel is 20" in diameter with a 2" face and is driven by a 7½ h. p. Westinghouse motor. This provides for quick and economic production for the wheels can be driven to their maximum capacity. This grinder is particularly good for 228" calendar stacks in paper mills.

The entire machine, including the driving head, the bed, the ways, and the neck rests, is rigidly and sturdily constructed, and all parts are adequately protected. The driving head which is direct-connected to a Westinghouse 25 h. p. motor is completely enclosed and provided with flood lubrication. Automatic lubrication is also provided for the ways and the feed screw as well as for the head.

Different Types of Salt for Water Softeners

The International Salt Co., Inc., 475 Fifth Ave., N. Y. C., well known producers of every kind of salt, through its research department, has secured some new facts regarding the economical operation of water softening equipment.

It is true that the salt brine necessary for the regeneration of the Zeolite in water softening systems can be produced with any grade of common salt, and users of water softeners have in the past gone on this principle. The size or capacity of water softeners, however, has an influence on what grade of salt will be most economical. These facts should be of interest to users of water softeners, and as Zeolite water softeners have proved their ability to reduce the cost of boiler plant maintenance, this phase of softener operation will contribute to the satisfaction of plant owners.

The facts regarding the proper grade of salt for regenerating water softeners have now been determined by the International Salt Co., and this information qualifies them to recommend the proper grade of salt for every type of softener.

Sealing Joints Against Oil Leaks

According to the General Electric Company there recently has been developed a protective paint that not only prevents water and gas leaks but very effectually seals joints against oil leaks. In addition to being capable of use wherever red or white lead is used it has the added feature of being less expensive.

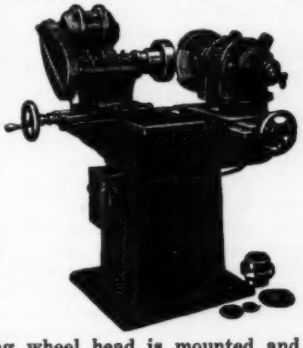
The paint, which is dark red in color, requires no priming and can be applied by brushing or dipping. Denatured alcohol is used as a thinner. It dries rapidly and produces a hard, glossy, smooth film which is easily cleaned and which prevents undue collection of dirt and conducting material, thereby decreasing surface leakage and subsequent carbonization of the surface when used with electrical apparatus.

One of the first fields in which the paint has been applied is in the manufacture of oil burners. One company, it seems, has standardized on the new paint for the purpose of sealing joints. The application of the new protective coating, however, limits it to no one field, since it applies equally well to boiler room equipment, electrical apparatus, and other material having wide diversity of use.

New Type of Slitter and Disc Grinder

The Bridgeport Safety Emery Wheel Co., Bridgeport, Conn., have recently placed a new type of slitter and disc grinder on the market. The accompanying illustration shows this machine arranged for grinding slitter cutters, these cutters to be carried and held on the work spindle by a nut and suitable bushings. The machine is arranged for alternating current motor drive, eliminating all belting.

The grinding wheel is carried directly on the shaft of the driving motor and has a suitable guard provided. This motor shaft is equipped with ball bearings, one bearing in each motor end shield. These ball bearings take all radial load and stabilize the shaft endwise, resulting in a very free and suitable bushings. The machine is arranged for alternating current motor drive, eliminating all belting.



The grinding wheel is carried directly on the shaft of the driving motor and has a suitable guard provided. This motor shaft is equipped with ball bearings, one bearing in each motor end shield. These ball bearings take all radial load and stabilize the shaft endwise, resulting in a very free and smooth-running grinding wheel. The grinding wheel head is mounted and may be swiveled on a slide which operates in and out by hand through a screw and hand wheel.

The work spindle is driven by a motor mounted directly on the work head and connected to the work spindle by a silent chain and suitable gearing to obtain the proper work speed. The work head is also mounted on a slide, upon which it may be swiveled. The slide may be fed in or out by means of a screw and hand wheel. A graduated collar indicates the amount of feed. The ways upon which the work head slide operates are at a right angle to those of the grinding head.

The machine is arranged for grinding dry, but may be arranged for wet grinding, using a centrifugal pump. A magnetic chuck may be used and circular knives, meat chopper knives, slitters, etc., ground very satisfactorily. The maximum swing of this machine is 16 inches; the floor space it occupies, 42x42 inches, and its net weight is 1250 lbs.

New High-Low Water Alarm Signal Panel

A new General Electric signal panel, the CR-4779-A-1, has been designed for use in pump installations—especially in buildings—as a warning signal for the purpose of calling an attendant in case of danger from overflow or emptying of the tank. The panel is governed by one or two float switches.

With this panel an audible signal sounds immediately when either the predetermined high or low level of water is reached. The gong can be silenced by the attendant upon his arrival, and the silencing switch does not have to be manually reset after the float switch takes a normal position. "High" and "low" signal lamps are provided, either of which lights when the predetermined level has been reached, remaining lit until the float takes a normal position.

The panel can be used for a one-level signal by omitting

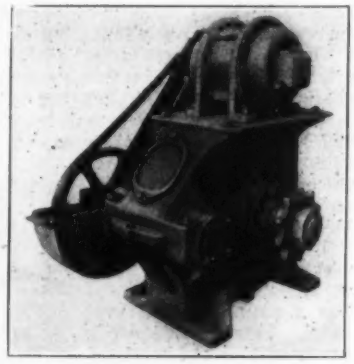
the float switch for the other level. It can also be used on pressure systems but, when single-pole float or pressure switches are used, it is necessary to add a relay in place of the other pole.

New Caldwell Speed Reducer

The H. W. Caldwell Son Co., Western Ave., at 17th and 18th Sts., Chicago, announces a new speed reducer as Type "A", and Type "B", Caldwell Speed Reducer, Type "A" illustrated herewith.

While Type "A" was originally designed for conveyor and elevator service, it is also applicable to other kinds of machinery, while Type "B" is designed especially for driving screw conveyors. Each reducer is a self-contained unit, entirely enclosed, with the motor mounted on top of a housing. It occupies very little space, and can be installed in narrow passageways, where it would be impossible to accomodate some other types of reducers.

It is a combination of two separate drives: a Link-Belt silent chain drive from the high speed shaft and a cut spur gear drive to the low speed shaft, made in sizes to furnish ratios from 7:1 up to 40: in Type "A" or to 30:1 in Type "B". The cast-iron housing is well constructed, assuring proper support and alignment, and made to prevent oil leakage, and to exclude dust and dirt from the working parts. The housing has a large hand-hole for inspection purposes. The upper part of the housing can be separated from the lower part without disturbing the mounting of the motor. Timken typered roller bearings carried in cartridge mountings support the oversize shafts, and eliminate friction. Outboard bearings are unnecessary. The motor and silent chain drive are mounted directly on the housing, making it impossible for them to get out of alignment.



It is unnecessary to use a flexible coupling on the motor shaft with this speed reducer. The Link-Belt silent chain drives selected are standard sizes of chains and wheels now carried in stock all over the country. This reducer with a range of ratios up to 40:1, has a large field of profitable applications in the industries.

An Early Advocate of Forest Management

Austin Cary, D. Sc. was a visitor at the offices of the American Paper and Pulp Association on July 5. Dr. Cary, who has for a number of years been Logging Engineer for the U. S. forest Service, spent the greater part of the winter in the South and is more enthusiastic than ever in regard to the forest possibilties of that region. His work there has brought him into close contact with the pulp and paper industry and his thoroughly practical point of view gives added weight to his recommendations.

At the present time Dr. Cary is returning to Maine for his annual vacation and for field work supplementing his former studies of spruce in Maine. His spruce volume tables, first published in 1909, are still standard, the most recent check having been made by the Northeastern Forest Experiment Station at Amherst, Mass.

The results of recent experiments in the girdling of inferior hardwoods in the mixed hardwood and softwood stands of the Northeast are another demonstration of the value of Dr. Cary's work. He has long advocated this measure as a feasible step in forest management and has now seen his ideas successfully carried out on a commercial scale by one of the larger pulp and paper manufacturers in the Adirondacks.

Catalogues, Booklets, Etc.

The Brown Instrument Co., Philadelphia.—This company announces catalog No. 45, featuring Brown electric tachometers, as displacing catalog No. 44, preceding issue on the Brown tachometer. This is the first of a series of Brown tachometer catalogs in which the line offered is entirely electric. A new form of centrifugal tachometer, utilizing the inductance bridge principle as a connecting link between the transmitter and the indicating and recording instruments, is for the first time announced to tachometer users. The fully enclosed generator, now standard equipment with all Brown generator type electric tachometers, is also presented for the first time.

Buffalo Forge Co., Buffalo, N. Y.—"Buffalo" Conoidal Ventilating Fans are well described in their new catalog No. 422, which will be sent upon request. The many illustrations and specification data should be of especial interest to the user of conoidal fans. Both the duplex and turbo types are treated in this booklet.

Fulton Engineering Co., Middletown, O.—A new bulletin, No. 28, describes practical paper drying, and also gives details about the "Niagara" outside float level control which can be used for eliminating great quantities of water from paper machines or other steam heated equipment. The bulletin also describes the Fulton Heating Coil Circulator and Receiver used for improving the circulation in heating coils and removing water of condensate and air from them. They will be pleased to send No. 28 upon request.

L. F. Grammes & Sons, Inc., Allentown, Pa.—The 1927 reference book on information on safety devices has been received, and should be a valuable book for safety engineers—a condensation of fundamental truths about accident treatment, accident prevention and insurance rate reduction. To our friends interested in safety, this book entitled "Reference Book of Valuable Information on Safety Devices" should be of interest.

The Jeffrey Manufacturing Co., Columbus, O.—Jeffrey standard apron conveyors are described in their new catalog No. 435, with the wide range of application of their handling of bulk and package materials. Typical layouts giving general dimensions accompany the tables of specifications.

Link-Belt Co., Chicago.—A new bulletin, No. BO10, gives complete dimensions and specifications on the line of Link-Belt crawler shovels. Copies will be sent upon request. Link-Belt Typical Elevators, is book No. 680, and consists of 44 pages of illustrations, examples, ratings, capacities and tables showing how to select typical elevators.

Metropolitan Life Insurance Co., New York City.—Booklet No. 7, is titled "Functions of the Purchasing Agent," and is divided into three sections as follows: (1) the place of the purchasing agent in the organization, (2) the duties of the purchasing agent, and (3) the problems with which the purchasing agent is faced.

W. H. Nicholson & Co., Wilkes-Barre, Pa.—Their bulletin No. 627, describes the new Nicholson flexible coupling. This coupling has new lubrication features that will undoubtedly be of interest to our readers.

The Manufacture of Glazed and Fancy Papers

After a lapse of twenty-four years, a new third edition of Weichelt's indispensable encyclopedia of glazed and fancy papers is available. The first edition, published in 1903, comprised 262 text pages, 144 illustrations of machinery and apparatus and 96 pasted patterns or specimens of fancy papers. Three years after the second edition was issued in 1908 Weichelt died at the age of seventy-one years, and now a third greatly enlarged and revised edition of his monumental work has been issued under the auspices of the Papier-Zeitung, Berlin, which has engaged the services of expert crafts-

*Weichelt: **Buntpapier-Fabrikation.** Dritte, unter Mitwirkung von Fachleuten durch die Schriftleitung der Papier-Zeitung ungearbeitete Auflage. Verlag von Carl Hofmann GmbH., Berlin SW 11. In Halbleinen mit 247 Abbildungen und 273 eingeklebten Mustern. Preis 30 RM.

men in putting out a book enlarged to 413 text pages, containing 247 illustrations in the text, and no fewer than 273 pasted designs or patterns, by which is meant actual representations of finished papers such as marbled paper in beautiful designs and fancy lithograph papers, many of extraordinary beauty as regards both color and finish, and presented in mat as well as glazed surfaces.

The volume abounds in formulas for coating compounds, colored as well as uncolored, good descriptions being given at the same time of technical processes of manufacture. A number of fancy and glazed papers are included which appear for the first time in Weichelt's book, novelties that have been introduced to the trade within recent years, such as tinted crepe papers, Batik paper, irridescent papers, including mother-of-pearl, and a whole line of marbled papers. Carbon papers and noninflammable papers are described and formulas given for their manufacture. As a treasury of choice specimens of modern art in fancy papers, there is nothing to equal this book which must be considered the standard reference work on the subject. In addition to formulas for glazed and fancy papers much useful information is given concerning the manufacture of coated boards and cartons. The color reproductions represent the last word in artistry and are sure to delight the eye of the connoisseur in such matters. The one fly in the ointment is that the book is printed in the German language.

A Bulletin on Liquid Caustic

The use of caustic soda in concentrated liquid form offers some advantages over the solid form both as regards economy and convenience, and to such executives of pulp and paper mills as are contemplating a change from solid to liquid caustic, Bulletin No. 270 of the Mathieson Alkali Works, Inc., 250 Park Avenue, New York, will be particularly useful. In the bulletin facts are stated that are calculated to enable mill managers to judge the benefits of such a change, while for those who have already gone over to the use of liquid caustic, the bulletin contains useful data on methods for transferring, handling and storing, as well as notes on the dilution, testing and properties of caustic liquors. Mills that use several carloads of solid caustic during the year are potential users of 50 per cent liquid caustic, such as is now marketed by the Mathieson Alkali Works in tank cars. An 8,000-gallon tank car of 50 per cent caustic liquor contains approximately 25 tons of caustic soda in solution, or the equivalent of a minimum carload of solid caustic in standard 700-lb. drums. It is interesting from an economic standpoint to know that the delivered cost of liquid caustic is usually less comparatively than that of solid caustic. In addition to other useful matter in the bulletin is a table of values as related to specific gravity and the Baume and Twaddle scales; by reference to this, it is easy to compute the composition and strength of a given liquor. Methods of analysis are also indicated and rules given for computing values. The Mathieson Alkali Works will be glad to send copies of the bulletin free of charge to interested consumers on request.

Pulpwood in the Lake States

The pulp and paper industry in the Lake States will find much information of interest and value in the annual report of the Lake States Forest Experiment Station, a copy of which was recently received by the Woodlands Section of the American Paper and Pulp Association. The report not only gives the status of the various research problems on which the station is working at the present time, but also presents a brief but comprehensive picture of the progress of forestry in these states during the three years since the establishment of the station.

As an indication of the importance of the pulp and paper industry in the Lake States, it is of interest to note that of the eight research projects, now under way, seven have some bearing on pulpwood production. Following is a list of the projects now being carried on by the station: management of northern hardwoods and hemlock; management of swamp forests; possibilities of aspen-birch lands; fire studies; possibilities of scrub oak lands; methods of cutting in jack pine; leaf litter study; forest insects.

Breeding Rapid-Growing Trees for Pulpwood

By D. A. CROCKER

Secretary, Woodlands Section, American Paper and Pulp Association

THE experiments in "The Breeding of Rapid-Growing Trees for Pulpwood," described in the April, 1927, issue of The Paper Industry, and more recently in the daily press, furnish further evidence of the increasing tendency of the pulp and paper industry to call on the scientist for aid in solving its problems. Although the experiments have not yet been carried far enough to indicate their value and will not be conclusive until actual forest plantations of hybrid varieties of poplar have been brought to pulpwood size, they will be watched with interest by the entire industry, particularly because of the hope that eventually the same principles might be applied to spruce.

It is doubtful if the present experiments will have much effect on the industry as a whole, because of the large available supply of poplar and other species suitable for the manufacture of soda pulp, but such experiments require years for completion and demonstration on a commercial scale, and no project of forest research can be started too quickly.

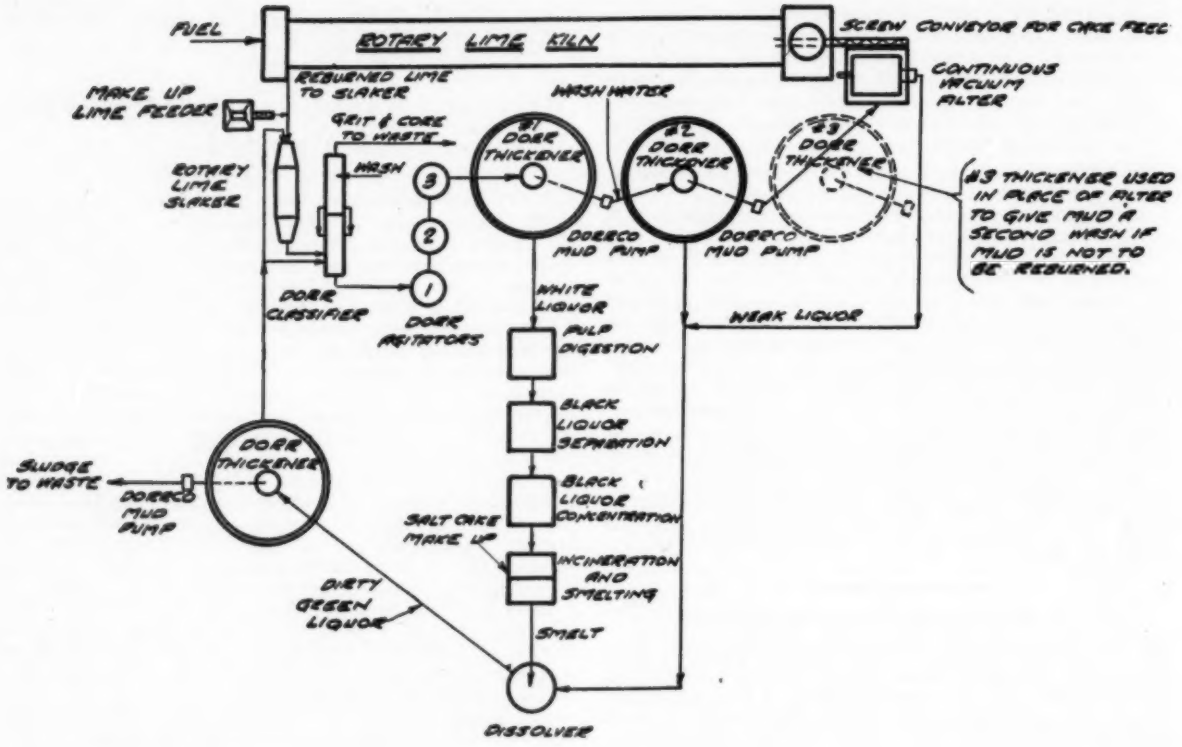
Since poplar is found in commercial stands on land which has been burnt over and since there are large areas in the Northeast, which have been burnt over in recent years, and now carry heavy stands of immature poplar, many authorities believe there will be more poplar available in this region twenty years hence than at the present time. This is certainly true of Maine and possibly of the other northeastern States in the poplar range. In the Lake States it is estimated that there are thirty million cords of poplar now of merchantable size with an annual consumption for all purposes of about 25,000 cords and an annual growth of at least 600,000 cords.

The swamps of the southern States contain large quantities of gum, maple, etc., suitable for the manufacture of soda pulp and the only reason these supplies have not been drawn upon more heavily is that the market for soda pulp has not expanded rapidly and there has, therefore, been little likelihood of profit in its increased production in the South. It is, moreover, uncertain when the time will come in which there will be a general need for artificially reproduced stands of poplar pulpwood, especially when we consider the probable increase in poplar bearing areas in the North before the forest fire problem is solved, and the rapid natural growth in the southern hardwood swamps.

The scientists who are carrying out these investigations state that pulpwood is today being cut four times as fast as it is growing. Even for spruce in the Northeast, this statement is too sweeping and the prevention of forest fires and the introduction of forest management in our spruce forests promise an eventual growth exceeding the present day consumption for pulpwood and all other purposes. It is to be regretted that these experiments have not also been started with spruce, particularly in view of the fact that this species will not reproduce from cuttings but only from seed, which means that a much longer period must elapse before a hybrid can be developed which it will be possible to plant on a commercial basis.

Only the rashest of men would state that such experiments as those of Dr. Stout and his associates can never be of value to the pulp and paper industry. It will be unfortunate, however, if the publicity given to these experiments withdraws public support from measures already proven of value in making our forests perpetuate themselves, to the benefit of the wood-using industries as well as to the benefit of the general public.

The recent "National Program of Forest Research" prepared by the Society of American Foresters, lists many problems whose solution is of major importance if our millions of acres of nonagricultural land are to be kept productive. It would seem that the poplar hybridization experiments are likely to affect only a small fraction of this acreage and a small portion of the pulp and paper industry.



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In this continuous recausticizing plant for sulphate mills.

Flexibility of operation and ease of control are features of the Dorr Continuous recausticizing system that appeal to practical paper men.

In the sulphate mill layout illustrated, two adjustments, regulated according to the amount of green liquor entering the system, control the whole operation.

1. Adjustment of wash water flowing to the last Thickener in the series.
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INVESTIGATION TESTS DESIGN EQUIPMENT

Bearing of Statistics on Distribution

Particularly pertinent to the editorial on page 374 of THE PAPER INDUSTRY for June, 1927, is a statement issued by Paul S. Hanway, statistician of the American Paper and Pulp Association, at a recent conference of the association executives and representatives of the paper industry press.

Commenting on an observation frequently made by the manufacturers of certain grades of paper, that conditions which affect the paper industry in general do not affect the consumption of their particular grade or grades of paper, Mr. Hanway said this might or might not be so, but if it was not so, then he asked what it was that did affect the changes in demand for a given grade of paper.

It is true that current general business conditions do not affect all grades of paper in equal measure, certain elements of the business structure having a more direct bearing on demand of one type than on certain other types. This was illustrated by a reclassification of the various grades of paper into four major groups from the standpoint of consumption, as follows:

1—**Paper for Packing and Shipping:** Board, Wrapping, Bag, Tissue, etc.

2—**Paper Sold as Paper:** Writing, Towel, Toilet, Absorbent, etc.

3—**Paper Sold for Printing:** Cover, Book, News, Poster, etc.

4—**Paper Used for Building:** Hanging, Building Boards, Sheathing, Felts, Roofing, etc.

It is evident, he argues, that building and construction are the most influential elements affecting building papers, just as it must be true that advertising affects newsprint and book paper, or that chain-store sales affect bag consumption. To enlarge more fully upon the foregoing would involve a study of one of the paper industry's most important present-day problems—namely, research on distribution.

The Problem Stated—The big problem, according to Mr. Hanway, does not consist entirely of determining the tonnages consumed, but rather the determination of just what specific elements of the business structure finally make possible that consumption, as well as the elements that may help to increase it.

This brings in the distribution of the dollar—the distribution of income throughout the nation; wages and salaries, dividends, interest, savings, building and loan accounts, etc., all of which aid in determining the future trends of business and of consumption. This money is not evenly distributed throughout the nation, and distribution in the various districts is affected by the industries in the district which make wages, savings, etc., possible. These industries, or practically all of them, being dependent on the income from other industries for their sustenance.

But there are certain reasonably accurate indexes of the elements which affect the various major industries and to these can be added those elements which affect a particular grade of paper, and thus the research is well on its way. The chief difficulty seems to be that when many concerns arrive at or near this point, they consider the job as almost finished and the research not entirely satisfactory.

Suggestive Queries.—Depending on the product, there remain other problems still to be solved. Some of these, framed as individual interrogatories, by Mr. Hanway, follow:

What is the per cent increase in income, in the regions where my paper is sold, as compared with changes in population, manufacturing, agriculture, etc.?

What, on the average, is the business of my customers, and upon what other main industries are they dependent for their income?

What can my jobber tell me about the per cent ratios of his distribution to various classifications of business?

Since consumption is increasing, where is it increasing in the most stable manner so far as my customers are concerned, and what is the cause of it?

What was my ratio of sales to total sales for my grade of paper?

Where do sales cost me the most, and am I carrying on interminable missionary work for the benefit of my competitors, with no profit to my own mill?

What major conditions exist today which will probably affect my sales during the coming months?

The foregoing queries require accurate and timely statistics, facts and figures of the past as well as of the present. When such facts and figures help to develop new markets, reduce inventories, and eliminate red ink, they become more than mere statistics. Like Lindbergh's plane, they are part of the organization, of "we."

The industry has now developed machinery through the association to produce the right type of statistical reports which will help to answer some of the queries stated above, but the machinery can run satisfactorily and at a profit only as it is supplied with raw material from the mills in the way of full reports.

The American Paper and Pulp Association will be in position to develop accurate and timely statistics for its members only as the mills directly or through affiliated associations report promptly and regularly on the grades which they produce.

New Southern Advance Bag and Paper Company

Announcement has recently been made of the $3,000,000 loan floated for the new Southern Advance Bag and Paper Co., Inc., to be built in the town of Hodge, La., entirely owned by the company. The loan is being floated by Peabody, Houghteling & Co., of Chicago.

A modern kraft pulp and paper mill and bag factory of brick, steel and concrete fire-proof construction is being constructed, and will be practically identical with capacity and type of their present mill located at Howland, Maine. Approximate capacity will be 100 tons of kraft pulp per day, which will be converted into paper to supply the requirements of the parent company's bag factory at Middletown, Ohio.

The Southern Advance Bag & Paper Co., Inc., owns about 67,000 acres of timber lands, together with timber rights on 30,000 acres additional in Northern Louisiana. The Northern Louisiana & Gulf R. R. controlled by the Southern Advance Bag & Paper Co., Inc., connects all parts of the properties and is operated under the authority of the Interstate Commerce Commission. They will own a 6-inch pipe line, about 45 miles long, to supply natural gas to the mill for generating power and steam in the manufacture of its product.

The practically inexhaustible deposit of lime rock on the property is essential in the manufacture of kraft pulp. One-half of all the mineral rights on the fee land, with minor exceptions are owned by the company.

According to J. N. Harvey, vice-president of the Advance Bag and Paper Co., mail sales offices at 301 Congress St., Boston, the new mill will probably be ready for initial production about the first of next March. Mr. Harvey stated that the 242-inch fourdrinier is to be the largest kraft machine in the world, and will be the sole paper machine at the start, with provision being made for expansion as market conditions warrant. The new machine is under construction at the shops of the Pusey & Jones company.

There will be an authorized and outstanding issue of $2,000,000 7% Preferred Stock, and 12,500 shares No Par Value Common Capital Stock. Of these amounts $1,250,000 par value of the Preferred Stock and all of the Common Stock is owned by the Advance Bag & Paper Co., Inc.

John E. Kelly, is president; John N. Harvey, vice president; Chester A. Ring is Engineer in charge of mills, and will construct the new mill, and C. S. Jackson, vice president.

The Richardson Co., of Lockland and Cincinnati, O., announces addition of a new department for the manufacture of suit boxes, cake boxes, etc. This new department occupies the former building used for manufacturing of asphalt roofing and shingles, adjoining the carton plant and boxboard mill. A complete line of machinery has been installed and is now in full operation. Wm. Newman, formerly with the Peerless Paper Box Mfg. Co., of Cleveland, O., is in charge of sales.

This Rosin Size Contributes to Quality

AS THE standards of paper making progressed, there arose the need for a Rosin Size to keep abreast of modern methods of paper making.

Kalbfleisch Rosin Size was introduced to meet this need. Quality and uniformity were the prerequisites, requirements which have been rigidly adhered to. As a result, Kalbfleisch Rosin Size is a dependable medium for obtaining continuously good results.

Kalbfleisch further cooperates with paper manufacturers by installing the DeCew Sizing System and patented processes for free use of our customers.

Other Kalbfleisch quality products for paper makers include—

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NEW ENGLAND NEWS

L. L. Brown Wins Suit

The victory of the L. L. Brown Paper Co. was rather unexpected to many in the trade who believed that results being the same, and essentially the same methods employed, the Court could not but find for Weston. However, Judge Morton effectively disposed of the belief that the methods were similar. He took the precaution to obtain expert advice and to personally inspect both mills before reaching a decision. His opinion was sweeping enough to cause an award of costs to the defendant as well as a verdict. The Judge granted the verdict on the basis of dissimilarity, not because of Brown's claim that Kron's 1905 split asbestos roll patent was in anticipation of Weston. The latter's patent was vindicated as being completely valid.

Many were not aware of the fact that L. L. Brown's method of obtaining the thin stripe was to use a "drag," which is a flat piece of metal somewhat wider than the hinge to be formed, and which was hung lengthwise over the stock on the machine, serving to plow away a certain amount of stock which is kept from flowing back into the stripe by air which gently issues from the tube carrying the drag. Curtains also dip lightly into the stock for some distance.

In contrast, the Byron-Weston Co. methods is simpler but uses an air suction nozzle to suck away enough of the stock to form the stripe and at a point where the pulp is sufficiently matted on the machine to obviate any possibility of its running back into the stripe after passing the air pressure point. The stripe remains and becomes permanent as the web dries. Judge Morton says that Weston uses air directly, Brown only as an aid to his drag. That air may be used on wet stocks, is an idea, and as such unpatentable, unless confined to a definite use of that air, is a principle enunciated by the Court.

Traffic League Meets

The Pulp and Paper Traffic League held a series of interesting meetings at the Copley Plaza Hotel in Boston. This was coupled with a most enjoyable social program for both ladies and men in the party. The election of officers brought J. E. Bryan, traffic manager of the Wisconsin Paper & Pulp Traffic League, to the presidency of the organization, succeeding A. D. Huff, traffic manager of the Canadian International Paper Co., who became a member of the Executive Committee. C. C. Furgason, traffic manager of the West Virginia Pulp & Paper Co., became vice president of the League, C. L. Whittemore, traffic manager of the New England Paper & Pulp Traffic Association, continued as secretary. M. M. Davis also continues as treasurer. The executive committee includes besides the foregoing, Messrs. Huff, Dowdell, S. H. Brown, H. T. Ratliff and T. T. Webster.

Easily the feature of the business at the three-day meeting was the question of unit loading, specifically, the Acme and Gerrard systems. These embrace the idea of a wire or wire tape stretched out in the empty box cars so that paper rolls can be securely bound together in units as the car is loaded. This effectually checks abrasion, chafing and much damage incident to normal freight movement. Andrew P. Lane, traffic manager of the Great Northern Paper Co., discussed the methods employed at his mills and other newsprint traffic men gave enlightening ideas on the efficacy of the system. This discussion involved experiments also undertaken by several companies to ascertain the exact shocks suffered by paper in switch and general freight movements, particularly with a view to securing more careful handling in the "hump" classification yards.

The question of private sidetrack remuneration to the roads raised by the Maine Central R. R. and promising to become a national issue was discussed. The League is pledged to prompt action if any roads attempt to secure compensation for this service. In connection with the General I. C. C. Investigation of class rates in official classification territory, T. T. Webster has prepared an exhaustive report for use of the League in furthering the interests of the industry when the proper time arises.

A satisfactory solution of the Paper Core Rate situation was announced by Mr. Whittemore and others present.

It is expected the League will meet for its next general gathering in Montreal, P. Q.

Warren Co. Build New Mill

A new coating mill is to be erected by the S. D. Warren Co., though Treasurer Morgan states that it is not constructed with the idea of an immediate increase in capacity, in fact it is designed to facilitate shipments, make for greater efficiency in delivery from fourdrinier to coating machines, and thence to railroad cars or storage rooms.

It will be of two stories and basement, and will involve the tearing down of several older buildings. Six coating machines are to be installed, though probably not all at once. There is also to be an addition to the machine shop and a rearrangement of tracks from the B. & M. siding to conform to the new plants. A large storage house 200 by 150 ft. will adjoin the new coating mill. Paper will come from the finishing room of the coating mill to the storehouse which will have a large loading platform and so arranged as to permit car movement without obstruction of any kind.

The company is at present running tests on a new powdered coal installation made by the Combustion Engineering Corp., of New York. A Riley Stoker installation for burning powdered coal has been in successful operation for some time. Both units were installed by the company's own engineering crew, under the supervision of mill manager Joseph A. Warren. In fact, the new coating mill, machine shop and storage house are all being done by the company's own staff of engineers and workers.

Aside from the Strathmore and Northeastern Division Superintendents' meetings, the outstanding events of the past month in New England were the victory of the L. L. Brown Co., in the suit over hinged ledger paper, the Pulp & Paper Traffic League meetings at Boston, and the announcement of important new construction at the S. D. Warren Co. mills. A new mill at East Hartford, Conn., or, perhaps, a new company would describe it more accurately, will make bond paper.

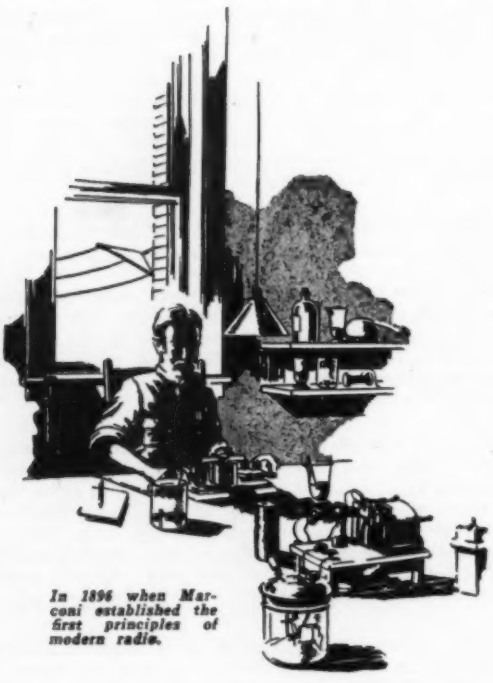
Looking at New England from the standpoint of business-orders for paper, things are somewhat less encouraging than a month ago. Leading book mills have cut since then to five days weekly, and whereas in April and May one such producer was unable to supply enough pulp from its own operations for its beaters and was forced to buy Swedish, today it is down to five days and the pulp mill will probably be at the same rate before the end of July.

A mill to manufacture high grade bond paper is to commence operations in the near future and was the cause of visits by representatives of the International Brotherhood of Paper Makers, who were given permission by the operators of the new mill to unionize their employes.

Bird & Son, Inc., report a splendid safety record to date. They are fortifying their campaign with a new feature, a monthly "Safety News" giving the latest data on safety progress, and live discussions of the subject. Then placards will be set up all over the plants, and records of the various divisions published. Early in June it is understood they had less than 32 lost time accidents among 1492 employes, for the year to date.

Berkshire Hills Paper Co., of Adams, Mass., after being refused an extension of time on outstanding accounts payable on terms recently offered, has been petitioned into receivership, Henry L. Harrington, president, being appointed receiver. He has been given permission by the Massachusetts Superior Court at Adams, Mass., to continue operating the

Appleton
Felts and Jackets



In 1896 when Marconi established the first principles of modern radio.

When Marconi established the first principles of modern radio–back in 1896–Appleton Felts and Jackets were preferred by paper mills throughout America. Since that time they have been in constant use, with the same general acceptance now as then.

For 36 years Appleton Woolen Mills have been making felts and jackets that for quality and service have become the standard. Durability and adaptability that only a high grade wool can produce are the outstanding reasons of a product made with a plant control that checks every detail of manufacture. Accuracy, design, finish, attention to detail and service are other reasons for the wide acceptance of Appleton Felts.

Let us show you what we mean by quality and service on your felt requirements.

APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

QUALITY SERVICE

mill pending efforts which are being made to reorganize the Company's finances. The offer of payment on extended terms provided for withholding all payment on outstanding accounts until late this year, then a small payment, the remainder in installments over a period of years.

Crane & Co. was awarded the contract for the manufacture of money paper, a contract they have had for some 45 years. It was deemed unwise at this juncture to make a change, yet it is reported in Holyoke that manufacturers are preparing to bid on the business again next year as they did this year.

General closing for from one to two weeks were noted in the fine paper sections of western Massachusetts dating from July 2. Inventory taking, repairs, new installations will occupy the time of the maintenance and office forces.

Louis Dejonge & Co., coating paper manufacturers of Fitchburg, Mass., have introduced a new sheet of coated paper known as "Deco" to be companion lines of its famous Artgloss and Artmatt Enamel. Deco Enamel is offered as a medium priced sheet.

A rumor widely current that the Pepperell Card & Paper Co., of East Pepperell, Mass., was to be sold, is emphatically denied by J. Howard Cashman, general manager of the company.

It is reported that a paper mill in Windsor Locks, Conn., has been acquired by Arthur D. Little, Inc., chemists and engineers of Cambridge who recently announced the discovery of a method of newsprint production from southern gumwood. Mr. Carpenter, of Little experimental laboratories, in charge of paper investigations, could not be reached.

The Rex Pulp Products Co., of Portland, Me., has been incorporated under Maine laws with capitalization of 62,000 shares of stock. According to their charter papers they will engage in pulp making and the manufacture of pulp products. J. G. Ryan is president.

It is understood that employes in paper mills of Holyoke have been given the opportunity to take technical courses in papermaking under Amherst College instructors and professors. This has stimulated the International Union towards a general campaign to co-operate with locals and individual members in arranging for the formation of classes in paper making throughout the country, the expense to be borne in part by the unions.

Glazed Paper Men Hold Luncheon Meetings

The value of practical co-operation in the paper industry is seen in the fact that a group of the members of the Glazed and Fancy Paper Manufacturers' Association, of which R. N. Fowler, of the Hampden Glazed Paper and Card Company, is president, are meeting together for luncheon in Pawtucket, R. I., every two weeks for discussion of common problems.

The secretary of the association, O. M. Porter, with offices at 18 East 41st Street, New York, met with this group on June 15th to discuss an expansion of the association's statistical service.

United States Pulp Producers' Association

The United States Pulp Producers' Association is co-operating actively with the American Paper and Pulp Association in a comprehensive study of the pulp situation, the results of which are being developed in a series of charts covering domestic production, consumption, imports, etc. These charts were planned to be available for distribution to members of these associations about July 1.

K. A. Chowdhury has been selected for the post of Wood Technologist at Dehra Dun, India, and is coming from England to Syracuse in order to take a two years' intensive course under Dr. H. P. Brown, head of the Department of Wood Technology at the college.

Manitowoc Engineering Shipments

An initial shipment of two cars, which will be followed very shortly by other shipments, containing two Paulson barking drums, eight rotary incinerators, and eight disc evaporators, will be installed by the Southern International Paper Co., in their new mill being erected at Camden, Ark.

Complete shipment has also been made of one sulphite digester, and two Howard pulp refiners to the Bagasse Products Corp., for their new mill being erected in Cuba.

The Manitowoc Engineering Works have under construction three sulphite digesters for the West Virginia Pulp & Paper Co., one for the Rhinelander Pulp and Paper Co., one for the Nekoosa-Edwards Paper Co., as well as a large Paulson barking drum for the Kimberly-Clark Co.

The Industrial Works, Bay City, Mich., announces the closing of their district office in Tampa, Fla., effective immediately. The district office in the Hurt Bldg., Atlanta, Ga., will handle all of Florida, Alabama, Georgia, North Carolina, South Carolina, and the eastern portion of Tennessee.

Blake, Moffit & Towne, paper jobbers of Los Angeles, have increased to such size as to warrant establishment of a branch warehouse at Phoenix, Ariz., to care for it. A one-story, concrete and brick warehouse will be built, and the structure is to be completed by September 1.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington D. C., or its branch offices. It is requested that the number of the inquiry to be given at all times.

No. 25688—Bond paper, art coated paper, and newsprint. San Juan, Porto Rico. Agency desired.

No. 25666—Cigarette paper. Lisbon, Portugal. Agency desired.

No. 25690—Crepe paper and specialties. London, England. Agency desired.

No. 25687—Paper, printing and wrapping, and stationery. San Juan, Porto Rico. Agency desired.

No. 25686—Paper for protection of shoes in manufacturing. Nuremberg, Germany. Purchase and agency desired.

No. 25666—Paper, printing, writing and wrapping. Lisbon, Portugal. Agency desired.

No. 25685—Tissue paper for fruit wrapping. Lancaster, Australia. Agency desired.

No. 25682—Toilet paper. Cairo, Egypt. Agency desired.

No. 25711—Waxed tissue paper. Quebec, Canada. Agency desired.

No. 25721—Baling machine for paper. Panama City, Panama. Purchase desired.

No. 25729—Paper mill machinery. Vienna, Austria. Agency desired.

No. 25824—Box-covering, printing, writing and wrapping paper. Leicester, England. Purchase and agency desired.

No. 25901—Filter paper. Soerabaya, Japan. Purchase desired.

No. 25825—Paper, letterpress and lithographic, and counter roll packing paper. London, England. Purchase desired.

No. 25976—Paper bags, waterproof, for fertilizers. Melbourne, Australia. Purchase and agency desired.

No. 25977—Wall board. Dresden, Germany. Purchase desired.

No. 26011—Vulcanized fiber. Riga, Latvia. Agency desired.

No. 25978—Paper, paper bags and pasteboard. Leicester, England. Agency desired.

WALMSLEY MACHINES EXCEL

Two 234" Newsprint machines installed at Powell River in 1926

Powell River making newsprint records

The Powell River Digest Says:

During the month of February our biggest output for twenty-four hours was on number five, which on the fifth of the month made 126.08 tons of newsprint. On the fourth of the month, number six machine rolled off 115.05 tons. Congratulations.

—Pulp and Paper Magazine, Mar. 31st, 1927.

Charles Walmsley & Co.

(CANADA) LIMITED

Works
Longueuil, Que.
Canada.

Office
Montreal, Que.
Canada.

Canadian News

International Paper Seeks Corner Brook Mill

Last month Premier W. S. Munroe, of Newfoundland, received notice from the Newfoundland Power and Paper Co. that the corporation was compelled to call upon the Government for $267,000, as guaranteed under the contract with the company, made in 1923, by which the Newfoundland Government and the British Treasury guaranteed the principal and interest of certain loans raised.

The Newfoundland Government has been asked to sanction an option by International Paper on the mills at Corner Brook, the power plant at Deer Lake, the pulpwood limits, and other properties of the company, the purchase being conditional on the Legislature granting certain concessions to the purchasers. The main points of the concessions are that Newfoundland should permit the new company (to be formed by International) to export pulpwood, perpetually and cumulatively, at the rate of one cord to every four manufactured; to forego royalties of $1 a ton on paper and 25 cents per horse-power on electricity; and to grant 4,000 square miles of forest lands in Labrador to form a reserve for its future operations, giving it five years to make its selections, the company to pay $2 a square mile annually.

Coincidentally with the negotiations for the Humber Valley enterprise, International Paper has arranged with the Reids for another project in the Gander Valley, on the east coast of the Island, where the Reid interests have 5,000 square miles of woodlands and power sites capable of being developed to the extent of 80,000 h. p., enabling a 400-ton mill to be built. Another 4,000-square-mile-reserve in Labrador is demanded in connection with the Gander Valley project, which would give International roughly one-fourth of the estimated merchantable forest areas of Labrador. The big American company also wants to acquire the water power rights at Muskrat Falls in Labrador.

In its reply to the company's agents, the Newfoundland Government has stated that Labrador must be excluded entirely from the operations of the company. As regards the forest areas of Newfoundland proper, the Government is prepared to grant International Paper concessions similar to those given by the Quebec and Ontario Governments to paper-making companies on terms substantially the same as required by those provinces. Special consideration would have to be given, however, to the peculiar circumstances of the paper industry in Newfoundland, the Government insisted.

Now comes the news that president Killam, of the Royal Securities Corp., of Montreal, is offering to negotiate for the purchase of the Corner Brook mill under terms which are considered much more favorable, from the point of view of the Government, than those of International Paper. Amongst others, the Canadian interests are not demanding the right to export raw pulpwood and are willing to take over the plant promptly and add two paper machines to the mill if the negotiations are successful.

According to a recent despatch from Washington, the marketing of 300,000 tons of news manufactured by the International Paper will be controlled by the Canadian News Print Co., through an arrangement between this company and International Paper. P. B. Wilson, manager of Canadian News Print, promptly denied this report, stating that the two companies are entirely separate in every way and that there is no connection of any kind between them.

During the month of May, Canadian newsprint mills operated at 86.7 per cent of their rated capacity and turned out 171,819 tons, of which 170,468 tons were shipped.

The following paper men were recently elected to the Executive Council of the Canadian Manufacturers' Association: Howard Smith, Howard Smith Paper Mills; A. D. Huff, Canadian International Paper; W. W. Southam, Southam Press; J. A. Bothwell, Brompton Pulp and Paper; I. H. Weldon, Provincial Paper Mills; Geo. Bridgen, Bridgen's Ltd.; and John F. Ellis, president of Barber-Ellis Ltd.

The National Research Council of Canada, it is stated, will shortly take up the matter of producing alcohol from the huge quantities of sulphite waste liquors being poured into the rivers, for using it as a substitute for gasoline in automotive engines.

T. Samson, of Sweden, has been visiting Canada on behalf of the Aktiebolaget Svenska Flaktfabriken, for many years specialists in ventilation plants for pulp and paper mills. Mr. Samson is working for a large Canadian concern as consulting engineer.

A. E. Cadman, statistician of the Canadian Pulp and Paper Association, is now in Europe to spend several months in connection with statistical work of the Association.

Hubert Biermans, former president of the Belgo-Canadian Paper Co., returned to Canada on one of his annual visits. When he sold his company to the St. Maurice Valley Corp., Mr. Biermans retained many business connections in this country.

A. M. Koroleff, logging engineer and secretary of the Woodlands Section of the Canadian Pulp and Paper Association, arrived in Montreal early last month, to meet the members of the Woodlands Section Council.

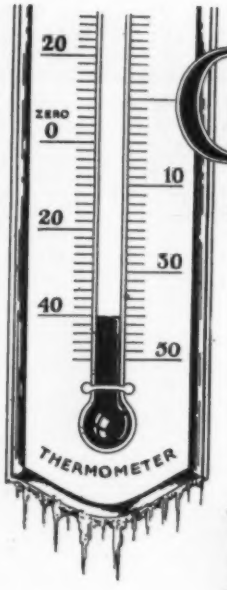
H. H. Fleming, of the Entomological Branch of the Department of Agriculture at Ottawa, has been assisting for three summers in a series of experiments, now concluded, on the operations of the spruce bark beetle, at Agawa Bay. Amongst other valuable information obtained from the experiments, it was found that woodpeckers are efficient destroyers of this pest, having destroyed about 98 per cent of those under observation, and that a fast-growing spruce will in almost every case drown out the attaching beetles, because the resin flow is much stronger than that of a medium or slow-growing spruce.

QUEBEC

St. Regis to Build at Cap Rouge

After several postponements and reports that most likely the St. Regis Paper Co., would not erect its new mills at Cap Rouge, where it has purchased over $100,000 worth of land, it has been definitely learned, according to a Quebec despatch, that the company is going ahead with its original project.

Work on the new mills will start in the course of the summer, and the project will be one of the largest in the eastern section of the province. When in full operation employment for nearly 800 men is counted upon. The company has completed arrangements with the Federal authorities for construction of certain wharves where its timber will be handled and its paper shipped. It will lease some timber limits from the Provincial Government shortly, but the limits to be obtained are not yet known, although they will probably be on the north shore of the St. Lawrence. The power will be supplied by the Shawinigan Water and Power Co. What adds interest to the decision of the company is



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Now is the proper time to begin making plans to cut the operating cost of your ventilating system this coming Winter and secure the savings provided by the

Briner Economizer

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It will recover and utilize the heat from the vapor that is now wasted—thereby saving steam, reducing load on your boiler in coldest weather and insuring economical production.

It provides most heat when you need heat most—during extreme cold weather. The colder the air entering the economizer, the greater the transmission of heat per square foot of surface.

Practically all modern mills are adopting the Briner Economizer method of reclaiming lost heat and eliminating this source of waste. Ask us to submit figures showing the savings being secured.

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that it is rumored they intend to utilize a portion of the mills for the manufacture of rayon.

Walmsley's Canadian Subsidiary Report

Earnings of Charles Walmsley & Co. (Canada), Ltd., of Montreal, subsidiary of the famous English paper machine manufacturers, amounted to roughly $180,000. There was also an appreciation of assets, amounting to almost $3,000 for each $1,000 bond outstanding.

The company was incorporated in 1923 to take over the assets and undertakings of the Armstrong, Whitworth of Canada, Ltd., and is controlled by the Sir W. G. Armstrong, Whitworth & Co., of London. The plant of the company has been operating at or near capacity for the past four years.

Work on New Laboratory

Work will begin on the new Pulp and Paper Research Laboratories on the McGill University campus as soon as possession can be had of the site, according to Secretary Beck of the Canadian Pulp and Paper Association. It is expected that the building will be completed by the end of the year. The approximate cost of the building will be $250,000, and in addition, an endowment of $100,000 is being provided by the Association for upkeep. The laboratory equipment will be the best procurable, and will compare favorably with that of any similar institution in the United States.

Nobbs and Hyde have been named as architects; F. A. Combe and E. A. Ryan are the consulting engineers; E. G. M. Cape and Co. have been named general contractors, while W. J. Lajeunesse will be in charge of the demolition of the old buildings. In addition to the Canadian Pulp and Paper Association, the building will house the Department of Cellulose and Industrial Chemistry of McGill University and the Pulp and Paper Division of the Forest Products Laboratories.

W. H. Birchard, of the Forest Products Laboratories, Montreal, is leaving to take up position as head chemist for the Scutan Co., manufacturers of waterproof coated papers, New York.

Air photographs of the Ontario Paper Co.'s limits and its model town of Taschereau, on the Outarde River, are to be taken in the course of the summer for the benefit of that organization, by Captain Harry Quigley, and Henry Bélanger, land surveyor, who will personally direct the operations for some time.

The Saguenay Pulp and Paper Co., Chicoutimi, have made a voluntary assignment, and Eugène Trudel, of the firm of Larue, Trudel and Piché, Quebec, has been oppointed trustee.

Professor Brot, French School of Paper Making, Grenoble, France, was the French delegate to the Canadian Convention of Chemists, held in Quebec City on June 6th to 9th. He gave two most interesting papers on "Chlorine Processes of Making Pulp," and "Nitration of Cellulose for Rayon Manufacture."

Canipo News

In order to set at rest rumors that International Paper or its subsidiaries are to make rayon yarns (artificial silk), President A. R. Graustein has issued an official statement that the company is not entering the field of rayon manufacture and has no financial interest in any company making rayon. International's sole interest in this field is the producing and marketing of Kipawa sulphite for making high-grade rayon. The output of this mill now supplies a large proportion of the total world's consumption of wood cellulose by makers of rayon.

It is reported from Ottawa that Gatineau Power has purchased the interests of the Ottawa and Montreal Power Co., which owns developed power sites at Yankleek Hill, Ont.; Rockland, Ont.; Vaudreuil, Que., and Côteau Junction, Que.

Some one hundred American newspaper publishers, all customers of International Paper, visited the Gatineau mill last month. When the party returned to Montreal, vice-president Joseph L. Fearing was conferred the title of honorary chief of the Iroquois tribe. This honor was conferred upon him by Chief F. McD. Jacobs, the name given being Chief Kanawake, meaning Chief Above The Rapids. A party of 150 members of the Engineering Institute of Canada visited the three power developments on the Gatineau River last month also.

At a special meeting of the board of directors of the Quebec Southern Power Corp., an offer of purchase by Gatineau Power was accepted, subject to confirmation by the shareholders. The company serves some 45 to 50 communities and is estimated to have a potential capacity of about 90,000 horse-power, all within 50 miles of Montreal and capable of economical development.

The company's No. 2 sawmill, at Rockland, Ont., near Ottawa, was recently struck by lightning and totally destroyed by an ensuing fire, with a loss of between $100,000 and $130,000.

A. J. F. Montabone has been appointed consulting engineer in charge of the new 800 horse-power hydro-electric development of the Donnacona Paper Co. on the Jacques Cartier River. This, when completed, will increase by over 50 per cent the electrical energy of the company and will take care of their increasing tonnage expansion.

Ground was recently broken at La Tuque by the Brown Corp., for building a new department to convert their kraft fibre.

The London Shipping Containers, London, Ont., recently acquired property in the north end of Montreal, and intend within a few weeks to start an up-to-date corrugated paper package plant. The property is about 140,000 square feet in area, with buildings covering about 100,000 square feet.

Standard Containers, Ltd., of Hull, whose factory was recently destroyed by fire, are rebuilding at a cost of $20,000, on St. Rédempteur St. in that city.

The first shipment of machinery for the Anglo-Canadian Pulp and Paper Co.'s mill at Quebec, arrived in that city recently from Manchester, England.

At the invitation of the Rolland Paper Co., the members of the Graphic Arts Club, Montreal, recently visited the company's fine-paper mill at St. Jérôme.

A very satisfactory increase in the enrollment of the Three-Rivers Technical School and Paper Making School during the past year denotes the growing interest which is being taken in this institution. The closing exercises, held last month, demonstrated in no uncertain manner that the many advantages offered by the school are appealing. Two of this year's graduates have secured positions, as assistant chemist at the St. Maurice Valley Corp., and at the Chandler mill of the Bonaventure Pulp and Paper Co.

Work at the Chute à Caron dam will begin in the near future. A contract has been let for the construction of a new road leading to the dam to replace the present one, which will become submerged and impassable with the commencement of operations at the Chute.

ONTARIO

Nipigon to Build at Port Arthur

D. M. Hogarth, member for Port Arthur in the Ontario Legislature, recently announced that Port Arthur is to have another large pulp and paper mill, which will cost when

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completed about $7,000,000. Arrangements have been effected with the Nipigon Corp., which has for some years been operating a 60-ton groundwood mill at Nipigon, but is also in control of several large pulpwood limits.

The company will locate its plant on the 100 acres set aside for the purpose between the Provincial Paper Mills' plant and the Thunder Bay Paper Co.'s $10,000,000 plant. In addition to agreement on the question of site, it is understood that a power contract with the Hydro-Electric Commission has been entered into, details of which are not yet known. The plans, as at present known, call for a 200-ton newsprint mill to be in operation by the end of 1928; and this is to be increased to a capacity of 400 tons by the end of 1931.

Mr. Justice Grant, of Toronto, has reserved judgment in the action instituted by the Keewatin Power Co., controlled by E. W. Backus, to restrain the Lake of the Woods Milling Co. and a subsidiary company from diverting water through a rock cut for power for their mills at Keewatin.

Damages of over $9,000 to E. B. Nettlefield and Co., were awarded recently in a breach of contract action taken by that firm against Corke, Sons and Co., Ltd., paper manufacturers, in judgment handed down at Toronto by Charles Garrow, K. C. The plaintiffs, E. B. Nettlefield and Co., are Grocers' brokers carrying on business in Toronto.

A federal charter has been granted to the W. J. Bell Paper Co., Ltd., of Toronto, with an authorized capital of $100,000, to take over the business and property of W. J. Bell Co., and to carry on the business of merchants, manufacturers and dealers in paper, cardboard, strawboard boxes, bags, etc.

At a recent meeting of the Town Council of Fort Frances, the delegates who went to Toronto to interview the Provincial Government regarding the export of power made an interesting report pointing out that Strachan Johnson, on behalf of E. W. Backus, contended that, while reservations of power for municipal, mining and industrial requirements on this side of the border were not objected to, the company would be privileged to export any power for which there was no immediate use in Canada. The delegation objected to the export of any power under any circumstances, claiming that the privilege of export granted in the past had created an unequal industrial development between Fort Frances and International Falls. The decision of the Minister was that no export would be permitted, except upon an order-in-council of the Government.

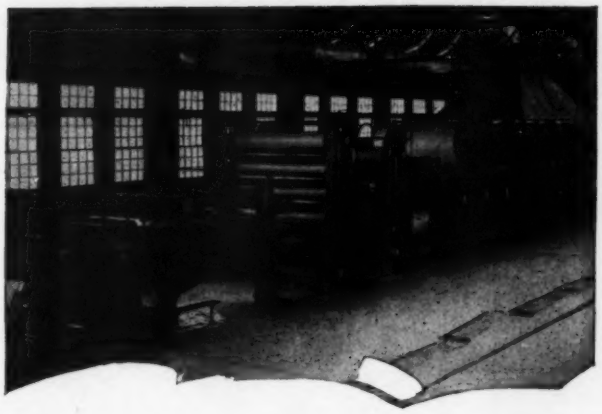
Work has been started on the erection in the Sudbury district of three steel towers, 80 feet in height, by the Ontario Forestry Department. These towers are to be used for fire prevention, and it is estimated that from them fires can be spotted 25 miles away. A number of wooden towers will also be constructed throughout the district.

Owing to the continued expansion of the Appleford Counter Checkbook Co., of Hamilton, to include not only counter checkbooks, but also a wide variety of waxed paper, building paper and other products in that line, the name of the company has been changed to Appleford Paper Products, Ltd. W. B. Powell, for many years manager, will still be in charge, and the policy of the organization will be the same as in the past.

Abitibi Jottings

E. R. Gosset, Toronto, for many years with Mattagami Pulp and Paper Co., and Abitibi Fibre Co., has resigned and returned to Toronto to reside.

The following appointments in the Abitibi Fibre Co., have been made: William Ellis, general superintendent, as mill manager; W. S. Merchant in addition to woods department manager is townsite manager; F. L. Mitchell will be connected with the company in a consultant capacity.



How do *you* treat *your* felts?

IN a recent article on "Care and Application of Felts" appearing in Paper Trade Journal, the writer makes this significant statement:

> "Both on the press and felt rolls the kinder you treat a felt the better results and longer life you will obtain."

Here lies the reason for the exceptionally long service obtained by paper making concerns who wash their felts the OAKITE way. For OAKITE "treats them kindly," does not weaken or otherwise harm their delicate woolen fibres. Cleans them thoroughly, yet leaves them soft and porous—like new.

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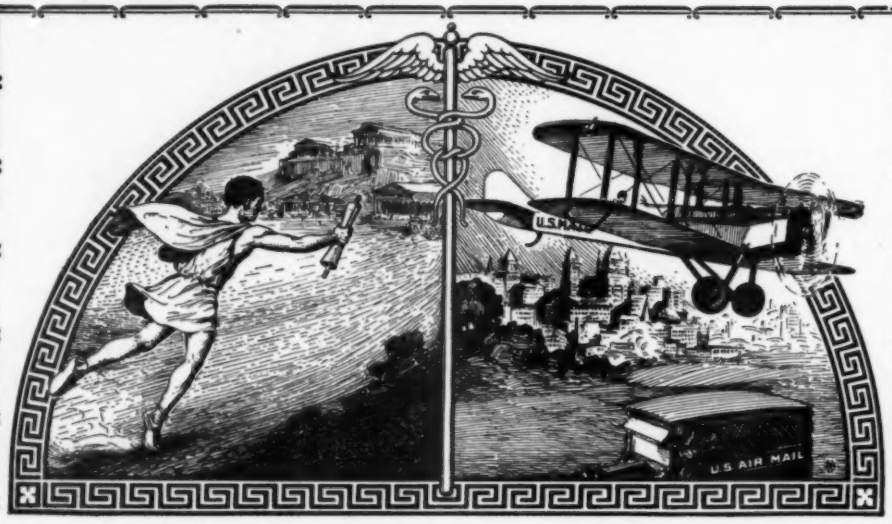

Giving Wings to the Written Word

WHEN Greek met Greek in the ancient days and business negotiations were started, the final decision usually required person-to-person conference. When it happened that the outcome was delayed and the closing date of the option was near at hand, then indeed did the letter transport of those days reveal its deficiency.

Many a time did the Attic business man write his belated acceptance upon a piece of treated sheepskin imported from Pergamum, roll this about a rounded stick, seal it with a wax impression from his official ring, and entrust it to a fleet-footed son of Hermes. Woe to the business deal if the messenger developed a weak heart or a stone-bruised heel!

The time that it required Athenian "special delivery" to convey a message from that center of culture to Megara, 30 miles away, now serves as quite enough for the winged descendants of Kitty Hawk to lift a half-ton of modern correspondence across the roofs and tree tops between New York and Chicago.

No longer does the mild-mannered sheep supply the basis of written records and the interchange of business agreements. Vegetable fibres—cellulose from shrubs and trees—white, plentiful, and inexpensive, now carry the business world's "yes" and "no."

Hammermill Paper Company

Erie, Pennsylvania

Alex. Johnson, of the Service Division at Iroquois Falls, has been sent to Smooth Rock Falls to work on the development of a control system for the purpose of supplying information on operating data, production and quality to mill operators and management of the Abitibi Fibre Co.

Abitibi Fibre, which has a pulpwood supply of 80,000 cords at the mill site at Smooth Rock Falls, have installed an improved system of fire protection to protect their wood pile, by installing a new piping arrangement with monitor nozzles.

D. W. Ambridge, formerly in charge of the Control Department of the Iroquois Falls mill, has gone with the new Anglo-Canadian Pulp and Paper Mills, Que. The Control and Research Departments will henceforth be combined under Dr. Campbell.

The 500-tons news mill at Iroquois Falls established a new production record on June 15th when 566.33 tons of paper were made.

After a lapse of almost seven years, north country settlers having claims against the Mattagami Pulp and Paper Co., are now to be paid in full by the Abitibi Fibre Co. About 53 settlers are affected, total claims to be adjusted amounting to over $25,000.

The efficiency of the protection system established by H. G. Schanche and W. Kishbaugh was tried out when a fire broke out on the Abitibi Transportation and Navigation Co., extension in the Abitibi limits recently. Fire fighters were rushed to the scene and after two days' work got it under control. The total area burned was 350 acres of young jack pine.

Provincial Paper Mills have provided for an extension to the finishing room of the Thorold Division, by the addition of a two-story and basement, 65 by 72 feet, which will be built of brick and reinforced concrete. Construction is now under way.

Mayor Crawford and Alderman Murphy, of the city council of Fort William, recently had a conference with E. W. Backus about the proposed newsprint mill of the Great Lakes Paper Co., to be built in Fort William. The company wishes to increase the capacity to 500 tons, involving some changes in the arrangements with the city of Fort William.

The Superior Paper Mills, Ltd., the latest industry in Thorold, will be in operation the first week of this month.

W. P. Bennett, formerly president of Rudd Paper Box Co., Toronto, and former head of the Canadian Paper Box Manufacturers' Association, sold out his interest in the business to Victor Donaldson, secretary-treasurer of the company.

Excavation started on the erection of an addition to the Courtaulds artificial silk factory at Cornwall. The building will be four stories high with basement, 100 by 140 feet, and will be constructed of steel, concrete and brick, costing about $300,000.

MANITOBA

Newsprint Mill for Nelson River

A new chapter in the development of the newsprint industry in Manitoba opened last month when an application was received by the Department of the Interior, Ottawa, from a group of Canadian and United States capitalists for a pulpwood berth on the Nelson River of sufficient size to warrant the erection of a mill with a capacity of 400 tons of newsprint per day. The application does not state the cordage required, but on the basis of the Manitoba Paper Co.'s concession, it would mean 8,000,000 cords of pulpwood, an investment of $10,000,000 and a payroll of upwards of 2,000 men.

This is the largest newsprint development ever planned for Manitoba. The application is from responsible capitalists who are prepared to put up as high a cash deposit as evidence

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A Mark of Stability

Warren Pumps are *guaranteed* as to excellence of workmanship and materials, and are *warranted* to give first class service.

There is a Warren Pump for every service in your mill.

It will pay you to standardize on "Warren" Pumps.

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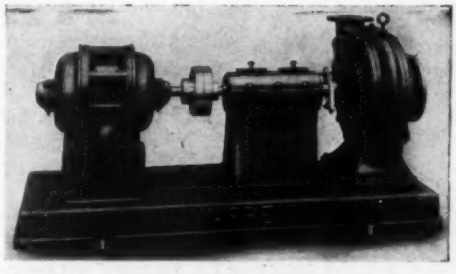

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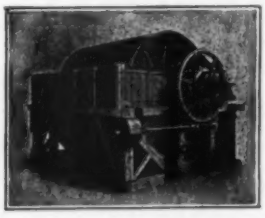

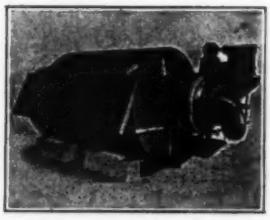

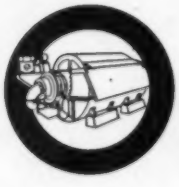

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of their good faith as the Department may require. Just who is behind the proposal is uncertain, but it is known that the leaders of the newsprint proposition are closely identified with the Manitoba Paper Co. Mr. Hurlbut, who is an executive officer of the Pine Falls mill, is directly responsible for the new application.

The proposal is that the applicants should be given the pulpwood area commonly known as the Nelson River berth, which has been set aside by the Department for separate development. With this berth goes the White Mud Falls on the Nelson River, the largest water power site in Canada, not excepting Niagara Falls. A temporary permit to develop White Mud Falls has been granted already by the Department to J. S. Menzies, of Winnipeg, but it is understood that he has given an option on this permit to the financial group behind the new application. Without the possession of White Mud Falls, no pulpwood development in the Nelson River berth is possible, since this is the only power source available. At the same time, the power site is too large for the newsprint mill, and it will serve as a source of power to the mining areas in the vicinity of the Hudson Bay Railway.

H. A. Robson, K. C., leader of the Manitoba provincial Liberal party, is advocating the immediate development of White Mud Falls as a Manitoba Government enterprise. He states he is convinced that cheap power provided by the Government is the only way to get wealth out of the northern gold fields. He would have the Nelson River power site developed at once along the lines of the Ontario Hydro-Electric Power Commission developments.

BRITISH COLUMBIA

The British Columbia Pulp and Paper Co., reorganized at the beginning of 1926, is operating one sulphite pulp mill at Woodfibre, near the head of Howe Sound, and another at Port Alice on Quatsino Sound, near the north west end of Vancouver Island, on a steady output of 200 tons per day. The production at Woodfibre has already been increased 15 tons per day, and at Port Alice it is also being increased by like amount. At the present time 900 men are finding steady employment in connection with these mills in their logging operations.

According to M. Manson, M. P. P. for Mackenzie, developments are being pushed ahead at Campbell River where the Crown-Willamette paper interests are establishing their large plant.

NEW BRUNSWICK

Independent pulpwood dealers of the province recently met in Fredericton for the purpose of organizing a Provincial Association. Angus McLean, president of the Bathhurst Co., presided, and Major T. A. McLean, special representative of the Canadian Pulpwood Association, acted as secretary. Ralph P. Bell, vice-president and manager of the Canadian Pulpwood Association, was also present.

The object of the gathering was the betterment of conditions under which the pulpwood business is being carried on and general stabilization of the industry for all concerned in it. A committee was appointed for formulating a general scheme of organization and calling the dealers together when ready to make definite proposals.

New Provincial Forestry Board

The Ontario cabinet has passed an order-in-council creating a provincial forestry board, as provided for in the Forestry Act passed at the last session of the Legislature. The new board will comprise Dean Howe, University of Toronto; E. J. Zavitz, deputy-minister of Forestry; J. A. Gillies, Brae-

Waldron Leadership Again Demonstrated

Announcing

The **NEW** *Type*

Surface Printing Machine For Wall Paper.

This new 12 Color Printer for 20 inch and 30 inch goods has been designed and developed to completely fulfill most modern manufacturing requirements—in general—better printing, accurate register, more accessibility for quick change of prints and reduction of maintenance charges. Its many major improvements and mechanical refinements of details attain a new standard of printing efficiency and operating economy.

The benefit of machine building knowledge gained from a century of specialized experience may be yours by consulting the Waldron Engineering Department.

JOHN WALDRON CORPORATION

Main Office & Works, New Brunswick, N. J.

208 W. Washington St., CHICAGO — 30 East 42nd Street, NEW YORK

Address Our Nearest Office.

REED SPAFFORD

Pulp Screen

WHAT DOES YOUR **POWER** COST YOU

UNHEARD OF LOW **POWER** PER TON

HALF **POWER** SAVED

VERY LARGE CAPACITY

VERY LIMITED FLOOR SPACE

OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

side; Ben Avery, Sault Ste. Marie; and H. G. Schanche, Iroquois Falls.

The members of the committee will have power to appoint their own chairman. The purpose of the board as designated in the Forestry Act, is to carry on research work in connection with the forest lands of Ontario and study all questions in connection with planting, growth, development and reproduction of pulpwood on Crown Lands and the lands of Crown lessees, licencees and concessionaries in the Province.

Melvin R. Ware, formerly of Baltimore, Md., has been made general manager of the Great West Paper Mills, who purchased buildings in St. Boniface and expect to be manufacturing boxboard and building paper in the course of a few months.

Moisture Testing of Baled Shredded Pulp

With the application of the Sargent dryer for chemical wood pulp, which is to be found in several mills supplying pulp for the market, the joint committee on methods of sampling pulp for moisture tests of TAPPI found that none of those already developed would apply to pulp in this form.

The pulp as it is delivered in a sheet from a wet machine is shredded on to a travelling wire screen which passes through a tunnel heated by steam coils or a current of hot air. At the discharge end the shredded and dried pulp drops into a baling press where the pulp is compressed into rectangular bales bound with wire.

In order to sample the pulp without the necessity of breaking the bales the following method has been proposed and the Joint Committee urges that mills use this method. The committee will welcome suggestions for improving the method.

Proposed Method for Sampling Baled Shredded Pulp

Select every tenth bale (10 per cent of the shipment) for sampling. Take the sample by boring into the bale with a special tool* similar to a cork borer. This tool cuts a sample 1¼ inches in diameter and to a depth of 4 inches. The entire sample is to be taken from the bale.

The holes to be bored shall be located so that in five successive bales they will represent a portion extending diagonally across the side of the bale. Each bale is to be bored once.

The first bale is to be bored at the corner of the bale, the edge of the cut being at a distance of 1 inch from the edge of the bale. The second cut is made half way between the location of the first cut and the center of the bale; the third bale is cut at the center; the fourth bale half way between the center and the corner; and the fifth bale in the opposite corner in a position corresponding to the first.

Generally an average car of this type of pulp will contain about 500 bales, ranging in weight from 70 to 190 pounds (note variation). Since a single sample weighs about 25 grams, the weight of all the samples on such a car will be approximately 1,250 grams.

Rayon Wood Cellulose—Not Yarn

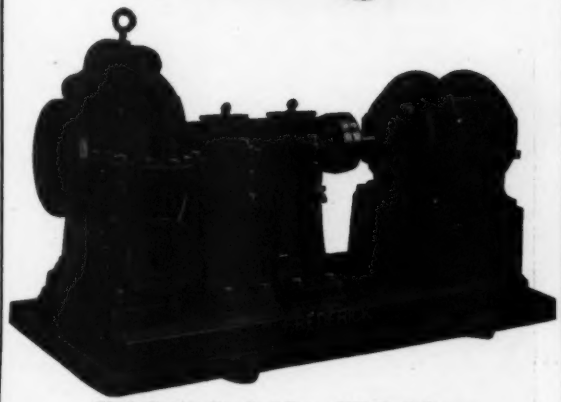
Recent rumors that International Paper Co., or its Riordon subsidiaries are to make rayon yarns, have been set to rest by A. R. Graustein, president of the International Paper Co., in an official statement setting forth that International is not entering the field of rayon manufacture, and has no financial interest in any company making rayon yarns.

It further stated that International is interested in producing and marketing Kipawa Sulphite Wool Cellulose for making high grade rayon. The output of the pulp especially made at Kipawa Mill of the Riordon Division of International Paper Co., now supplies a large proportion of the total world's consumption of wood cellulose by makers of Rayon yarns.

The Zellerbach Paper Corp., of San Francisco, Cal., will add a strawboard mill to their Stockton mill, with V. D. Simons of Chicago as Engineer.

*Crossley Sampling Tool made by Thompson Manufacturing Company, Lancaster, N. H.

Frederick
Centrifugal
Pumps



Single-Suction Standard Paper Mill Stock Pump

It is only natural that so many paper-mills throughout the United States and Canada should depend, more and more, on Frederick Pumps to handle their stocks of higher consistencies. Frederick Pumps were the first modern type stock pumps ever designed and manufactured, and, through constant improvements, have always continued to lead the way.

Our Standard Stock Pump handles stocks of consistencies up to 4% with excellent efficiency. Our Super-Stock Pump will efficiently handle 6% stock.

There is a Type of Frederick Pump Suitable to Every Need of a Paper-Mill

The Frederick Iron & Steel Company
Frederick, Maryland
In Canada:
Dominion Engineering Works, Ltd., Lachine, Que.

The North Rod Mill

Designed Especially for Paper and Pulp Mill Work

Makes Your Screenings into Valuable Pulp
Does Better Work Than a Beater at One-fifth the Horse Power
Positive Screw Feed, Assuring Positive Quality. No Attendant

The North Water Filter

The cut at the left is 20,000,000 gallon outfit for Northern Paper Mills. We have one 100,000,000 gallon installation and over 1,000 smaller jobs.

THREE SIZES

Save-Alls **Stone Bed Plates**

See Page 347 in the 1926 Paper and Pulp Catalogue

GREEN BAY FOUNDRY AND MACHINE WORKS

GREEN BAY, WISCONSIN

BRITISH CORRESPONDENCE

Present Trade Conditions

Home consumption of paper would appear to be on the increase, for 50,000 tons of wood pulp, in advance of what was landed during the same period last year, has been imported this year up to the end of May. Exports of manufactured paper were, however, 7,500 tons less than for the corresponding period last year, and imports of paper 365 tons less. The great proportion of the raw material imported consisted of mechanical wood pulp which forms three-parts of the material for making newsprint paper, and this is one class of paper in which consumption is steadily on the increase.

Wrapping paper imports are 28,815 tons less than last year, a drop of over 30 per cent. Board of Trade returns show that British makers must have benefited to the extent of an extra 28,000 tons because the use of wrapping paper has not decreased, and it is pretty evident that the depletion in exports has been replaced by increased output on the part of British mills, who are now benefiting substantially by the wrapping paper duty which was imposed just about a year ago.

April exports of printings, which include newsprint, declined from 237,274 cwt. a year ago to 183,635 cwt. this year, Australian purchases declining from 130,931 cwt. to 114,210 cwt., although general exports of paper to Australia advanced from 697,557 cwt. in January-April last year to 721,506 cwt. in the corresponding period this year. Exports of printings to all countries for the first four months of this year were slightly below the figures for the corresponding period last year—from 1,145,832 cwt. to 1,025,-805 cwt. this year.

Canadian competition is being keenly felt, and with an equal preference to that given to ourselves in Australia, Canada will make an increasing effort to secure a share in that market. A correspondent of *The Times Trade Supplement* states: "Canada's ambition is at last realized, and the Dominion is now the greatest producer of newsprint paper in the world. Moreover, she is not likely to lose that distinction for a long time to come."

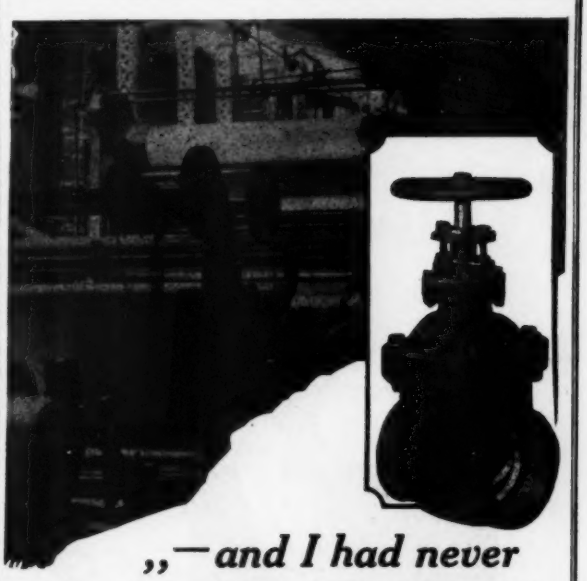
British woodfree mills are feeling the competition from Continental mills, who have "live" representatives in this country. Merchants are among the largest purchasers of foreign papers, and, as a result, home mills are tending to depend less upon the middleman and wholesaler, and more upon themselves in creating a demand for their products. There is a marked trend towards direct selling, improved methods of advertising paper, and an increase in the use of brands and proprietary markings.

A Historical Lecture

Interesting sidelights were revealed on the history of the paper-making industry in Scotland, at a lecture given the other day by Major J. Eddington Aitken, on "The Paper Industry—Historical and Progressive," to the Royal Scottish Society of Arts, at Edinburgh.

The lecturer pointed out that all paper up to the beginning of the nineteenth century was made by hand, and, in dealing with the history of certain mills, he referred to the fact that Messrs. Cowan of Valleyfield, originally made paper at 172, Canpon Gate, where Charles Cowan and his sons carried on a business as tea dealers and paper makers. The same firm had a grocery and wine business in Leith, and one of the sons of the founder of the firm was referred to by Sir Walter Scott as "Honest Duncan the Paper-maker." The speaker stated that several other mills on the Esk and Water of Leith have made paper since the middle of the eighteenth century.

Mr. W. Raitt, head of the Forest Research Institute, Dehra Dun, India, is now in England, and is to meet the members



„—and I had never thought of the VALVES!"

There is a type and capacity of Darling Gate Valve for every requirement of paper mill service—each valve a balanced mechanism, factory-tested to give years of dependable operation, without repair or replacement. Write for detailed information and catalog.

"Makers of Valves for the Paper Industry"

DARLING VALVE & MFG. CO.

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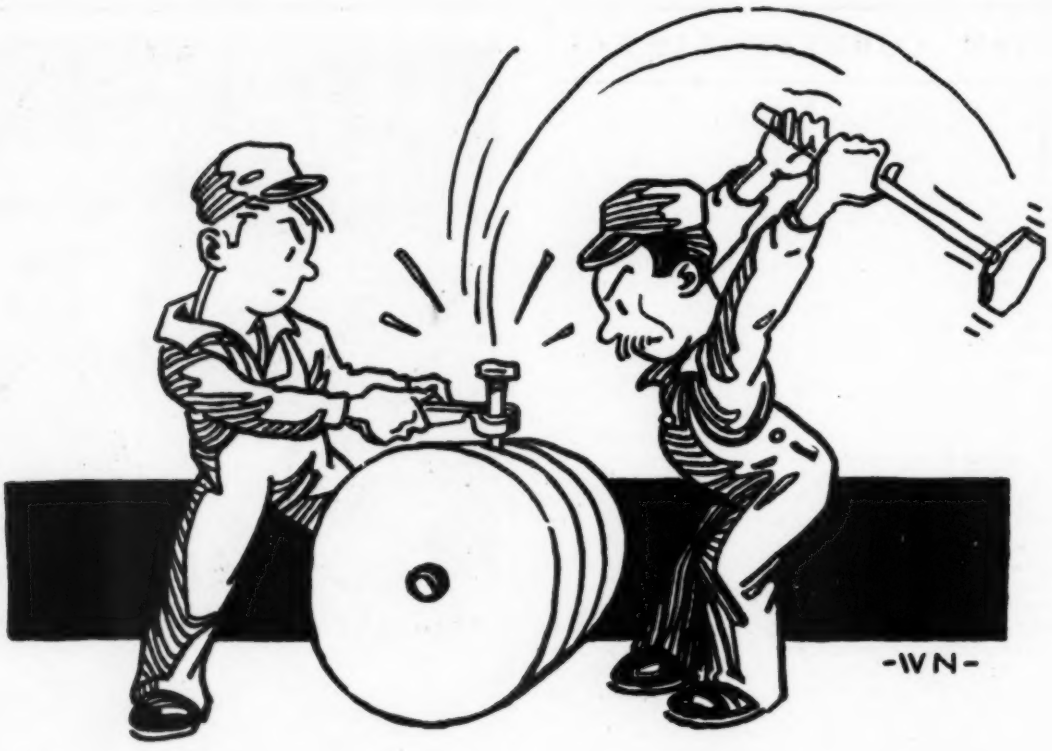


HIT IT AGAIN, HARRY!

And Harry hits it again, and keeps on slamming until something gives way. The sad part of it all is that, with every swing of the sledge, he is knocking off a good size chunk of the sale value of the roll.

The roll separation problem is one that causes no slight consternation in many Paper Producing Plants. It is not only annoying, but costly and, may we say, unnecessary.

The patented CAMACHINE system of Winder Drum Grooving assures the positive separation of rewound rolls.

Paper Producing Plants in which the paper making process goes along smoothly to the last step — the Slitting and Winding — and then hits a snag, would profit by investigating the merits of the CAMACHINE line.

CAMERON MACHINE COMPANY

61 POPLAR STREET, BROOKLYN, NEW YORK

PATENTEES AND BUILDERS OF CAMERON MACHINES

of the Technical section of the paper makers' association this month, when he will speak on bamboo for paper-making, a subject on which he is recognized as being an authority. Mr. Raitt's research and practical work at the Institute in India have led him to conclude that bamboo pulp, which is equal to the best easy bleaching chemical wood pulp, can be made in India in an unbleached state and landed in this country at a price to compete with wood pulp.

1000 Count in Practice

Mr. W. Howard Hazell, of Hazell, Watson, & Viney, Ltd., speaking at the twenty-seventh annual meeting and cost congress of the Federation of Master Printers, described the progress made in the direction of standardization and simplification in regard to paper sizes and qualities, and urged printers, in order to make the 1,000 sheets basis fully effective, always to order and insist on suppliers invoicing paper per 1,000 sheets, and boards per 100.

In a discussion which followed, it was urged that a date should be fixed when paper suppliers would adopt the new basis generally, and a resolution was unanimously adopted that the Costing Committee urge the paper makers at their next stocktaking to issue price lists and make up their stocks per thousand sheets instead of per ream.

Stationery and Kindred Trades Exhibit

Several paper manufacturers seized the opportunity offered by the holding of the Stationery and Kindred Trades Exhibition, at the end of last month, in London, to make special appeals to printers and paper users, and to educate them up to the infinite variety of uses to which their papers can be put, and to demonstrate to them the many attractive and beautiful forms in which it is obtainable.

Robert Craig & Sons, Ltd., of Scotland, a firm specializing in the production of every variety of blotting paper had an extensive show, and included other lines, such as: calender bowl papers for finishing papers or fabrics, papers for vulcanized fiber, electrical papers for cable insulation, and a special range for stationers. W. Lunnon & Co., of London, had an extensive show of their white and tinted bank papers. Samuel Jones & Co., Ltd., showed gummed papers; while large paper merchants such as Spalding & Hodge, Ltd., Chas. Morgan & Co., Ltd., and J. Simmons & Co., Ltd., had good representations of their various lines.

Damage estimated at £30,000 was caused by a fire at the Daily Telegraph paper mills at Dartford, Kent, at the end of last month. The outbreak was in a stack of pulp of over 2,000 tons, about 100 yards from the main building. The combined efforts of the work's fire brigade and Dartford fire brigade were successful in isolating the fire, which, however, continued to smoulder for about a week afterwards.

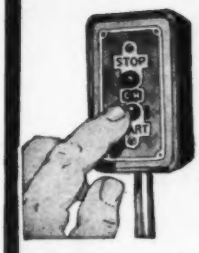
Frank Lloyd

Frank Lloyd, the head of the paper-making firm of Edward Lloyd, Ltd., died at the end of last month. He was one of the leaders of the paper-making industry in England, and his firm was one of the largest. The firm started paper-making in the early sixties with two machines, the larger of which was ninety inches wide.

In 1878, the mills were moved from Bow (London) to Sittingbourne in Kent. The original output of the two machines was 50 tons per week, and the materials used were rags, straw, esparto, and other vegetable fibers. Wood pulp for paper-making had not then been introduced. Later, a third machine, 126 inches wide, was added to the equipment. This was at the time a record width and its installation was looked upon as a very bold venture.

In 1891, a new mill was built and seven new machines installed, while in 1923 another new mill was added to house machines larger than any that had previously been built. These machines bring the output of the mills up to 3,500 tons per week, in the production of which 3,000 tons of wood pulp are used, and 2,000 tons of coal are consumed.

The experience is in the clutch!



WHY take a chance on faulty acceleration—when you can install clutches that automatically pick up the load smoothly?

Why not use clutches on your heavy drives that are independent of your employees' skill or experience?

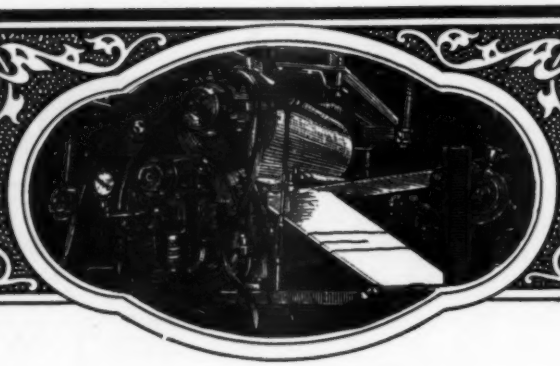
Cutler-Hammer Magnetic Clutches simplify the starting problem to a simple touch to a convenient push-button. The "fourth hand" can do it as well as the Plant Electrician—the skill and experience are built in the clutch itself.

It means decreased maintenance—fewer shut-downs—a saving in time. As your first step, just put a card in the mail today asking for the C-H Clutch Booklet that shows many applications in full detail.

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1254 St. Paul Avenue
MILWAUKEE, WISCONSIN

C-H Clutches in the plant of the Frank Smith Paper Co.

CUTLER C-H HAMMER
Industrial Efficiency Depends on Electrical Control



Matching Dollars With Dimes

The cost of removing a ton of water in the dryer section must be figured in dollars.

The cost of removing water in the press roll section needs only be figured in dimes.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Experience has shown that it costs only one tenth as much to squeeze out the water in the press rolls as to sweat it out with steam.

When you use Hamilton Felts you get felts that combine toughness and long wearing qualities with a weave that permits the maximum amount of water to be removed. They are woven with the experience of three generations of felt making.

And because they are so woven they deliver a better formed sheet and a stronger one to the dryers. There is less down time charged up—your mill enjoys the steady production that means big tonnage, lower production costs, and greater profits.

Ask the Hamilton Felt man who calls on you. He'll give you a felt that fits your individual needs.

SHULER & BENNINGHOFEN, Hamilton, Ohio

The Miami Woolen Mills—Established 1858

Hamilton Felts

PACIFIC COAST NEWS

Paper Box Association Meets at Del Monte

Carl R. Schmidt, vice-president of the Schmidt Lithograph Co., San Francisco, was elected president of the Pacific Coast Paper Box Manufacturers' Association at the annual election held June 29 at Del Monte, at the close of one of the liveliest and most successful conventions in the history of the organization. Mr. Schmidt served last year as vice-president. Russell Barker of the National Paper Box and Carton Co., Los Angeles, was named vice-president. Mr. Barker was not present at Del Monte, having just returned from the national meeting at Chicago. Charles Ruble of the Standard Paper Box Co., Los Angeles, was named secretary. Hugh Peat, San Francisco, is general secretary of the association.

The association elected to its board of directors C. A. Morgan, Portland, Ore., manager of the folding box department of the F. C. Stettler Mfg. Co., and A. J. Schoephoester of the Union Paper Box Co., Seattle.

It was decided to hold the next convention at Del Monte during the last three days of June, 1928.

Convention Well Represented—Heavy attendance from the Pacific Northwest marked the 1927 convention. This was in contrast to the convention a year ago, when only one delegate came from the north. Southern California also was well represented. Three new members were elected, the Eureka Paper Box Co., of Los Angeles; Hollywood Paper Box Co., Los Angeles, and Mission Paper Box Co., San Francisco.

Ed Russ, San Francisco, read an interesting paper on Color Plates and Miss A. Foster of Los Angeles talked on Purpose and Progress. A. J. Schoephoester, retiring president, stressed the need for one hundred per cent co-operation between competitors in the paper box industry in the west.

"We no longer call the man in the same business our competitor" said the president. "He is now our friend, engaged in working out the same problems that we face. By co-operating with him, we can solve these problems easier than if we tackled them ourselves. Co-operation is absolutely essential to the life of our business, and I believe the spirit of co-operation now pervades the paper box manufacturers of the Pacific Coast more than ever before."

A notable visitor to the convention was H. P. Beckett, attorney of Philadelphia, Pa., and commissioner of the National Paper Box Manufacturers' Association. His post as commissioner causes him to direct the broad matters of policy of the organization. He talked on the subject of co-operation between paper box manufacturers of the east and west, and said that he looks forward to the day when the boxmakers of the west will have representation on the directorate of the countrywide body.

The Alaskan Pulp Project

An intensive study of the power and pulp timber resources in the vicinity of Juneau, Alaska, is planned by George T. Cameron, publisher of the San Francisco Chronicle. Mr. Cameron and interests he represented, successfully bid for the Juneau pulp timber unit offered for sale a few weeks ago by United States Forest Service. C. A. Morden, publisher of the Portland Oregonian, who was named as one of the publishers working in conjunction with Mr. Cameron on the Alaska project, has announced his withdrawal from the project.

B. F. Hintzleman, assistant district forester in charge of the National Forests in Alaska, who made a trip to San Francisco to complete arrangements with Cameron, declared that two years of engineering work and another two years for the construction of the plants will be necessary before the first shipload of paper comes out of Alaska. Approximately ten million dollars will have to be invested. In return the purchasing interests will receive 5,000,000,000

Solves Pipe Problems

THE absolute tightness and extreme light weight of Root Pipe makes it particularly suitable for water conveying and stock translation in pulp and paper mills. One-fifth the weight of cast iron, one-third the weight of wrought steel, Root Pipe reduces suspended weight by at least two-thirds.

Sizes 6″ to 30″ diameter, asphalted or galvanized.

Equipped with simple bolted connections which assure modest installation expense.

Where light weight—absolute tightness—durability and ease of installation count, Root Spiral Riveted Pipe will prove superior to any other type of pipe.

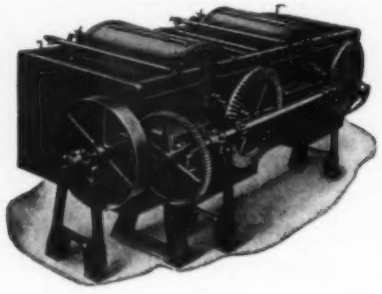
Root Spiral Riveted Pipe in the Beater Room

ABENDROTH & ROOT MANUFACTURING CO.

Pipe Specialists Continuously Since 1867.

233 BROADWAY, NEW YORK, U. S. A.

MILLS, NEWBURGH, N. Y.



Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

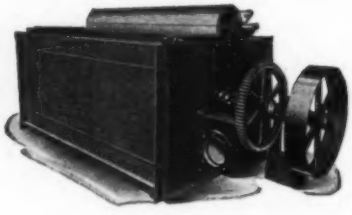
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

SEND YOUR ORDER AND GET THE BEST

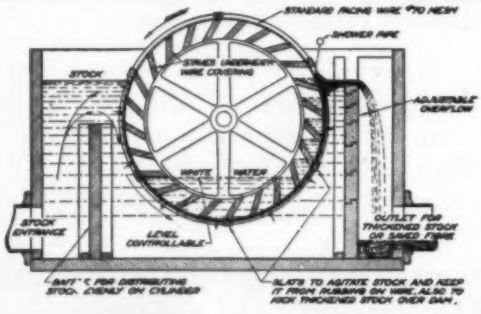


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.


STANDARD RICING WIRE TO MESH
SHOWER PIPE
STOCK
STOCK UNDERNEATH WIRE COVERING
ADJUSTABLE OVERFLOW
WHITE WATER
STOCK ENTRANCE
LEVEL CONTROLLABLE
OUTLET FOR THICKENED STOCK OR SAVED FIBRE
BAFFLES FOR DISTRIBUTING STOCK EVENLY ON CYLINDER
SLATS TO AGITATE STOCK AND KEEP IT FROM RUBBING ON WIRE, ALSO TO KICK THICKENED STOCK OVER DAM

A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

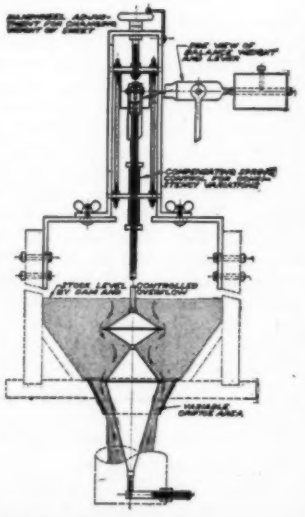
We have reports of 90-95% efficiency for a four year period

Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 50 already giving invaluable service on fast and slow speed machines, handling all kinds of stock. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 15 to 150 tons with equal efficiency. Sensitive action and direct control.

Write Us Now for Details



PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

See pages 344 to 345 in the 1926 Paper and Pulp Mill Catalogue

feet of pulp timber and the waterpower to manufacture it into paper, Hintzleman said.

"The effects on the labor markets of the Pacific Coast will be tremendous," declared Hintzleman. "It certainly is the turning point in the industrial life of Southeastern Alaska." Mr. Cameron, accompanied by Mr. Hintzleman and others, sailed for Alaska on June 4 to look over the ground.

Executives Urge Caution in Expansion

A note of caution to the pulp and paper industry of the West was sounded by Vice-President E. M. Mills of the Zellerbach Corp. in Seattle recently. "There have been as many failures as there have been successes in the pulp and paper industry on the Pacific Coast," he declared. "There has been a great deal of talk about the development here and while there is little question that the section will play an important part in the industry, the market has its limits and there is the greatest need for conservative and thorough investigation into the field before entering it."

Mr. Mills pointed out that the investments in the industry are extremely large and that in addition, a solid backing of engineering experience is necessary. The plans of the Zellerbach Corp. have not been given great publicity for the reason that over-enthusiastic optimists and unreliable promoters, he says, seize upon the facts and make unwarranted statements that often lead to failure.

"The manufacture of pulp and paper is a highly specialized branch of industry," Mr. Mills declared, "and not one that can be entered on a shoe string."

C. R. McMillen, vice-president and general manager of the Union Bag and Paper Co., New York, also urged caution when he recently made an extended trip over the Pacific Coast. "There is no question about the future of the West as a producer of pulp and paper, but there is need for caution in going ahead with the expansion," he declared.

Mr. McMillen pointed out that there are many kinds of pulp, and suggested that those proposing to go into the manufacture of it make a study of the possibilities that their available woods offer and determine in advance what and where is their market for the particular grade they will produce.

"The West should approach this future expansion in the right light," he said. "It should look to its market first, find out what it can dispose of, what kind of pulp it is, how much and where. The market is the cause, the mill is the result. Find your market and then build to fit the opportunity. If that policy is followed the West has a wonderful future as a producer of pulp and paper.

Grays Harbor Mill Under Way

Ground is being cleared for the construction of the new Grays Harbor Pulp mill at Hoquiam, Wash. An accumulation of slabwood, several feet deep in places, is being cleared and burned on the site of the old National lumber mill which burned down several months ago. Pile driving for the new mill will begin as soon as the ground is ready.

V. D. Simons, consulting engineer of the Zellerbach interests, who supervised construction of the new mill of the Rainier Pulp and Paper Co. at Shelton, Wash., will also have under his charge the construction of the Hoquiam plant. This will be similar in design and construction to the new Shelton mill, of 130-ton capacity. The investment will be between two and a half and three million dollars.

Zellerbach Plant Under Construction

Actual construction of the new $3,000,000 pulp plant at Hoquiam, Wash., has begun, and contracts for the construction of the main unit will be let in the near future, for the new plant to be modeled after other Zellerbach plants in the northwest, and when completed will be one of the largest pulp concerns on the Pacific coast.

The Zellerbach Corp. originally is a Nevada corporation, an outgrowth of a business established in 1876. Operations of the corporation are carried on through subsidiaries which own timber lands, a mechanical and sulphite pulp mill and

Variable Speeds in The Paper Industry

Variables in the processes producing paper demand variable speed machinery. To enable the operator to secure the speed best suited to the changing conditions use a LEWELLEN VARIABLE SPEED TRANSMISSION. LEWELLEN is solving the problem of variable speed on the following:

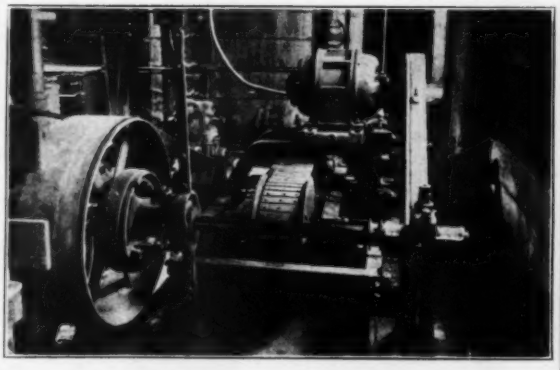
Coaters, conveyors, box making machinery, embossing machines, creping machines, paper machines, winders, pumps, binder board machines, sheet dryers, festoon dryers, supercalenders, sheet cutters.

LEWELLEN is solving these problems because behind a soundly designed transmission of guaranteed structural quality is experience.

We have recently issued a catalog describing the Lewellen Variable Speed Transmission in detail. Just a card will bring a copy.

LEWELLEN MFG. CO.

Columbus, Indiana



Above photo shows a Lewellen No. 15, Class "H" Complete Ball Bearing Transmission driving a binder board machine at the Kerr Paper Mills, Downingtown, Pa.

LEWELLEN Variable Speed TRANSMISSION

Hytor compactness saves floor space

A typical Nash Pump installation

A substantial saving in floor-space is not the only advantage to be obtained by using Nash Hytor Vacuum Pumps. Yet, this saving is of vital importance wherever working conditions are crowded, and space occupied by equipment must be economized.

Because of its unusually compact construction, a Nash Hytor can be installed in any position that will provide the most convenient arrangement of plant machinery. It is often located in out-of-the-way places. But no matter where installed, a Nash Pump always gives the dependable trouble-free performance for which all Nash Equipment is noted.

Write for sizes, dimensions, and prices.

NASH ENGINEERING COMPANY

161 Wilson Road So. Norwalk, Conn.

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Square, Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., 80 East Jackson Boulevard, Chicago, Ill.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

From Tree to Newspaper in 145 Minutes!

A NEWSPAPER was recently printed on paper made from the wood of trees cut only 145 minutes before the edition appeared.

The trees for this paper were cut at 7:35 a. m. and by 10:00 o'clock the newsboys were crying the paper on the street. The wood had been barked and pulped. The pulp had passed from the vats to the wire and the paper had gone through the dryers and the printing press in this short time.

This example of rapid paper-making is striking evidence of the speed made possible by modern paper-making machinery—principally by the Fourdrinier machine upon which the sheet of paper is formed.

Some of these machines carry the paper over the wire and through the dryers at the rate of 1,000 feet per minute.

For this rigorous service, The W. S. Tyler Company produces Fourdrinier Wires which are unsurpassed for their ability to run straight and true and for long, dependable service.

Tyler Fourdrinier Wires are woven by skilled weavers who have dedicated their lives to the weaving of quality Fourdrinier Wires. The specially drawn, extra tough wires are remarkable for their ability to withstand wear.

Tyler Wires produce paper of high quality as well as at high speeds.

Supplied in all widths up to and including 250 inches.

The W. S. TYLER COMPANY, *Cleveland, Ohio.*

TYLER FOURDRINIER WIRES

CYLINDER WIRES BACKING WIRES WASHER WIRES CORDUROY WIRE CLOTH HUM-MER ELECTRIC SCREENS

a paper mill with complete auxiliary equipment at Port Angeles, Wash., a tissue and towel paper mill at Carthage, N. Y., a box board mill at Stockton, Cal., conversion plants at San Francisco, Stockton, and Los Angeles, California, and Carthage, New York, a distributing organization consisting of 15 paper jobbing houses on the Pacific coast and 14 selling offices throughout the eastern part of the United States, with real properties in the principal cities of California and western states.

The management of the Zellerbach Corp. consists of a board of directors composed of: I. Zellerbach, N. R. Higgins, E. M. Mills, M. M. Baruh, J. Y. Baruh, J. D. Zellerbach and H. L. Zellerbach. At the present time they are offering 30,000 shares of convertible preferred stock.

High water forced the St. Helens Pulp & Paper Co., at St. Helens, Oregon, to construct rafts for loading on trucks, but in spite of this handicap, three shifts each day are kept going.

Purchase of more than 100,000,000 feet of hemlock and spruce in the lower Humptulips basin has been announced by the Grays Harbor Pulp Co., a subsidiary of the Zellerbach Corp. The tract covers between 4,000 and 5,000 acres.

The new pulp mill of the Rainier Pulp and Paper Co., at Shelton, is turning out about 80 tons of paper board a day in three shifts. The mill is working up gradually to its capacity of 130 tons daily.

New Mill for Tacoma

Two separate pulp and paper mills projects on the Pacific Coast have the name of the Northwestern Pulp and Paper Company.

One of these is planned for Astoria, Oregon. This is operating under the laws of Oregon and was organized in 1926. The corporation is headed by Chas. R. Flint of New York, and the board of directors is composed of prominent New York and Portland, Oregon, business men. A 120-ton sulphite pulp mill with by-products plants, will be constructed. Plans will be ready in July.

The second Northwestern Pulp and Paper Company was incorporated for $500,000 under the laws of Delaware. W. S. Dowd of New York, and John Buffelin, of the Buffelin Lumber Co., Tacoma, are planning a 50-ton mill for the present, to be built adjoining the Buffelin saw mill. Plans will be so drawn that the capacity can be doubled later on. They will use hemlock waste and have access to some very fine high line hemlock and contracts with five mills to supply them with wood.

Work on the extension program of the Hawley Pulp and Paper Co. mill at Oregon City, Oregon, was expected to be finished about the end of this year. The greatest single improvement is the installation of a new 234-inch fourdrinier. The machine, when thoroughly broken in, will have a capacity of 120 tons or more of paper daily and it is possible that a speed of 1500 feet per minute may be obtained. Ground was broken May 1 for the new project.

The Japanese Situation

Lawrence Killam, president of the British Columbia Pulp and Paper Co., Ltd., returned to Vancouver, B. C. from the Orient last month. He reported that the Japanese market is in bad condition due to the recent financial disturbances there and also as a result of the civil war in China, which country is the chief export outlet for the Japanese paper mills. Pulp stocks in Japan are large and prices are off. Trade with Japan is difficult because of the long time elapsing between order and delivery. Prices can fluctuate badly in the interim and cause trouble.

The Japanese buy considerable pulp from mills in Canada and the United States. The use of a brush for painting characters instead of using pen and ink, requires a special paper that Occidental mills can not afford to make because of the limited market, Mr. Killam believes. For their wrapping paper the Japanese use Manila hemp and sulphite.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

STANDARD SELF ALIGNING BELT FASTENERS

You can't go wrong on transmission or conveyor belts. Self Aligning hold the plate firm and square on the belt while rivets are being driven.

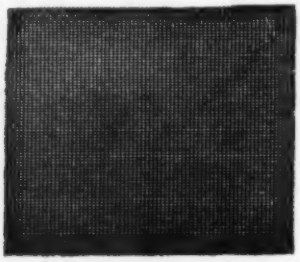
It is not necessary to use a rivet holder, nibs in the rivet hole align the rivet lengthwise of belt, the right way.

Self Aligning are rust proof and last indefinitely in wet or damp places, and you don't throw them away every time you take up a belt.

You need not turn your heavy wide belt over to clinch. Rivets may be clinched by driving against a block of metal on the under side of the belt.

Send for sample fastener for comparison with what you are now using. For 3 to 8 ply transmission to 5/8-in. thick conveyor belts.

THE BOURNE-FULLER COMPANY
UPSON WORKS
UNIONVILLE, CONN., U. S. A.



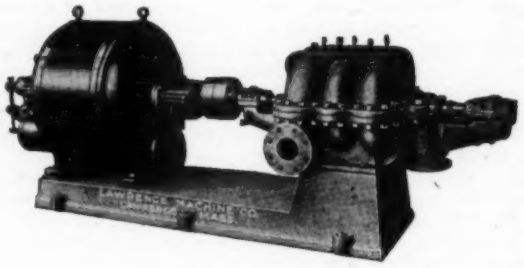
Superior weave

Smooth and of an even mesh, Superior wires do not groove the suction boxes. The strength inherent in their manufacture enables wires made by Cabble to give longer and better service at either high or low speeds.

Wires and facings for
Fourdriniers, Harpers and Yankees
Cylinder machines and wet machines
Thickeners, deckers and save-alls

The Wm.
Cabble
Excelsior Wire Mfg. Co.

74-88 Ainslie Street
143-151-162 Union Ave. Brooklyn, N. Y.



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

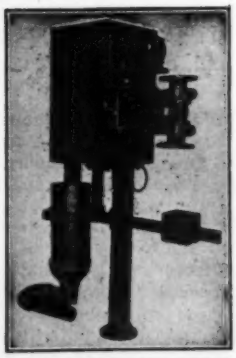
Lawrence Machine Company
Office and Works, 361 Market St.
Lawrence, Mass.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

DON'T WORRY OVER WEIGHTS!

Write to TRIMBEY

Used Wherever Paper is Made



More than 650 In Operation

"Made in Canada"

Agencies in Principal European Countries

TRIMBEY MACHINE WKS.
Glens Falls, N. Y.

Educational Plans for Zellerbach Corporation

An educational department has been established to further the policy of the Zellerbach Paper Corp., in giving material assistance in building up the paper industry and advocating the use of better paper by business houses. Rollin C. Ayres, advertising expert, with headquarters in San Francisco, has been named Educational Director and assigned the task of building up and supervising the work of the new department.

A course is being prepared on the manufacture, use and sale of paper for employees of the company, and also for the man engaged in selling.

Another course is being prepared on warehousing, order filling and sales procedure, with the idea of standardizing operation all over the Pacific Coast. This course includes lectures to sales force in group meetings of their several divisions. Talks pertaining to advertising and selling will be made from time to time before advertising clubs, service clubs and printers and trade organizations. Motion pictures displaying the manufacture of paper, from the felling of the trees in the forest to the production of the finished sheet, will also be shown. Direct mail advertising will be stressed in the field work, and how the individual firm may apply it to its business. Sales promotional ideas will be gathered and relayed to our sales force on the Pacific Coast so that the suggestions may be used with advantage to our customers.

N. W. MacLean, well known in the paper trade in Central California, has been named manager of the new San Jose, Cal., division of Blake, Moffitt and Towne, San Francisco paper jobbers. MacLean has been located in San Jose for several years.

N. A. Schoenbucher, secretary of the wrapping division of the National Paper Trades Association, after attending the convention of the Pacific States Paper Trades Association at Del Monte, late in May, traveled northward along the coast calling on paper houses and explaining the "net profit control system," the new method of arriving at costs in paper merchandising.

Trend Away from Contract Operators

The Woodland Section of the American Paper and Pulp Association has recently mailed to its members replies to an inquiry as to the relative advantages of "Company versus Contract Operations" which indicate that the present trend is toward more company operating and less contract operating than in the past.

The inquiry originated through one of the Woodlands Section members in the Northeast and was sent to the Northeastern members only. Eight replies were received, only one of which gave unqualified endorsement to contract operations. Other replies discussed the desirability of contract operations under favorable conditions but emphasized the difficulty of securing reliable contractors at the present time and the fact that the common practice in the Northeast of employing piece workers in company camps gave excellent results.

It was generally agreed that under proper conditions, contractors would produce cheaper wood than the company camp but have a tendency to turn out poorly prepared wood and to cut unsystematically. Another disadvantage of the contractor which was commented on was his tendency to throw back the contract when adverse conditions develop, leaving the company to finish the job and take the loss.

There seems to be a general desire on the part of those replying to use contractors wherever possible, but with one exception unfavorable experience in the past has made the companies very cautious about letting contracts. Profit-sharing arrangements in which the contractor and the company share the difference between a fixed price for the wood and the actual delivered cost were considered the most satisfactory arrangement by one company replying.

NORWOOD

Norwood Maintains a Valuable Engineering Service

IN KEEPING with our code of co-operating with paper mill men in every way possible, we maintain an efficient engineering service to help you in the solution of your paper mill problems.

We urge you to make use of this service. If you have a problem in connection with water filtration, or involving calenders, platers, dusters, suction boxes or brushing engines, we suggest that you write us.

We are always glad to discuss your problems, or to send you catalogs, illustrations or specifications.

You Can Depend on Norwood Equipment

NORWOOD ENGINEERING COMPANY
Florence, Mass.

NORWOOD

LAYNE WELL SYSTEMS

FOR PAPER MILLS

Economical Operation

Lower Maintenance

More Dependable

Longer Life

Higher Efficiency

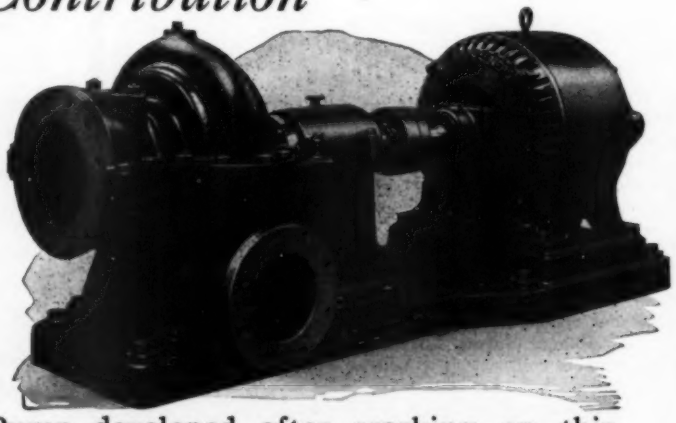
Greater Satisfaction

A Layne Well System has operated continuously for forty-nine months at the plant of Hammond Bag & Paper Co., Wellsburg, W. Va., without costing one cent for repairs.

Layne & Bowler, Incorporated

HOUSTON MEMPHIS LOS ANGELES

Allis-Chalmers Contribution to the successful handling of Paper Stock with better Efficiency



A New Paper Stock Pump, developed after working on this problem a long time until the pump met our ideas of what a good stock pump should be and do. The pumps will handle stock and are unusually efficient

ALLIS-CHALMERS

MILWAUKEE, WIS. U. S. A.

NORTHERN NEW YORK NEWS

Seeking Rate Reductions

A basis for reducing the freight rates on newsprint and printing paper from Watertown and Carthage to Chicago is laid in a recommendation to the Interstate Commerce Commission just made by the commission's Examiner in a case involving paper from points along the Niagara river.

Paper making plants, subsidiaries of the Chicago Tribune, located at Niagara Falls and North Tonawanda, complained that their rate of 27.5 cents per hundred pounds, the full sixth class rate, was unjust because competing manufacturers in Ohio, West Virginia, Michigan and Wisconsin have a commodity rate three cents per hundred pounds below the full sixth class rate. The St. Regis Paper Co., of Watertown, intervened in the case since it also pays the sixth class rate which is 44.5 cents per hundred pounds from Watertown to Chicago. The Examiner recommends that the Niagara region rate be reduced to the level of competing rates. He also recommends that the rates from Watertown and Carthage bear the same percentage relationship to the sixth class rates.

The rate from Watertown is now before the commission in the eastern class rate investigation, and the St. Regis company takes the position that it is unfair to distant shippers to make the newsprint rates uniformly three cents below the sixth class rate, but all prints should take a rate which is a certain percentage of the sixth class rate from those points, thus giving the more distant points the greater differential.

Pulp from Norway

A cargo of 6,000 tons of pulp from Norway recently passed up the St. Lawrence river bound for Chicago mills. It was brought to this country in a motor tramp steamship, the Saga.

When asked why the Norwegian pulp was brought from Norway to the United States, the captain of the Sago said that he had himself asked the same question when the ship was loaded and the reply was: "The cheapness mainly and, perhaps, on account of the quality.

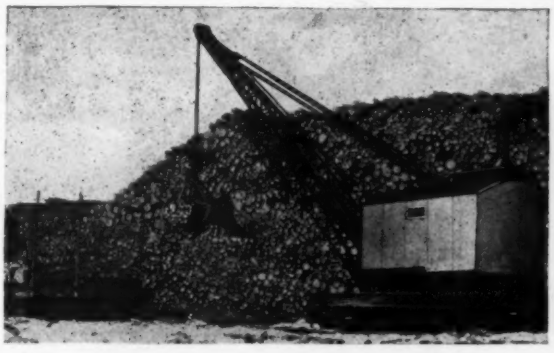
The Power Corp., of New York, which is one of the Carlisle groups and is closely allied with the St. Regis Paper Co., is constructing four hydro-electric plants on the Racket river. The corporation is also installing another plant at Taylorville on the Beaver river. The total horse-power developed by the four new plants on the Racket river will be a little over 15,000. Plans are under way for the development of several other large water powers on the same river and within a few years the Power Corp. expects to have at least 300,000 horse-power developed there.

Diana to Make Hanging Paper

The reorganized Diana Paper Co. plans to resume operations in a short time with the manufacture of hanging paper. The manufacture of magazine and catalogue paper will be discontinued. Minor repairs are being made at the mill to permit the new operation. For several years the plant made catalogue paper for the Sears-Roebuck Co. Shortly before the plant went into bankruptcy, glassine paper was manufactured.

A new company has been formed to operate the Diana mill. It will be controlled by the St. Regis Paper Co., although it will not be operated as one of the St. Regis group. Floyd L. Carlisle and H. E. Machold will be the dominant factors in the company. Some of the heads of the old company will be taken in as directors. The plant was bought by Edward S. Lansing, son of Stuart D. Lansing, president of the Bagley & Sewall Co., at the bankruptcy sale, and Mr. Lansing sold it in a few days to the St. Regis interests. The company will be operated under the name of the Harrisville Paper Corp.

The bankrupt hearings have been held before Referee John Conboy, and some of the principal creditors charge that the



Accuracy in Placing the Load

Absolute accuracy in placing the load is one of the superior features of "AMERICAN" Locomotive Cranes which should appeal with especial force to pulp and paper companies, as it insures the greatest possible efficiency and safety in piling pulp wood.

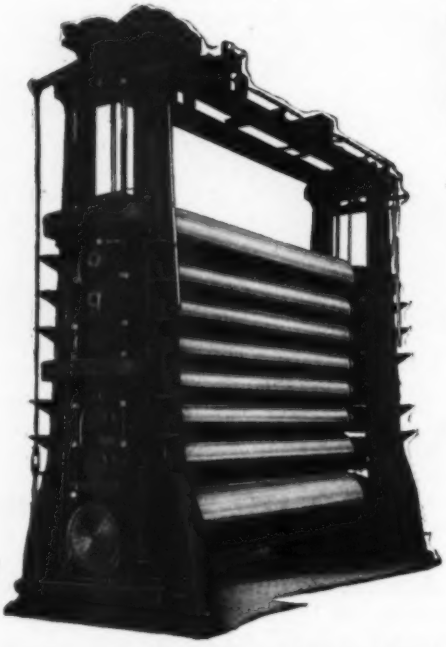
The flexibility and instantaneous response of the "AMERICAN" Expansive Frictions, which grip and release smoothly and without shock, make it unnecessary to resort to such an inaccurate device as a slip ring.

"AMERICAN" Locomotive Cranes run so quietly that shouted signals can be heard by the operator—something which is not true of all cranes.

Accuracy, Economy, Ruggedness, Safety; they are all characteristics of "AMERICAN" Locomotive Cranes—and all reasons why you should give the "AMERICAN" careful consideration before you commit yourself on the dotted line.

Write for a copy of the "AMERICAN" Locomotive Crane Book.

AMERICAN HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

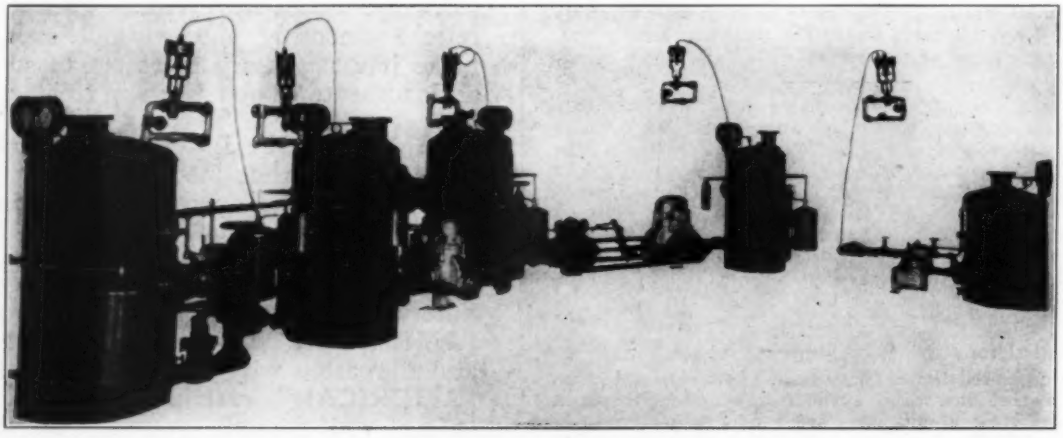
Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE



One Shipment

Increased drying efficiency is being secured in paper mills throughout the country with the improved Fulton dryer drainage System. The picture shows five Fulton Circulators ready for shipment. Your drying can be improved by our practical experienced paper mill engineers.

Better sheet—More production—Lower cost

Fulton Engineering Co., Middletown, Ohio

affairs were so manipulated as to give Mark S. Wilder, former president of the company, a preference over the other creditors. Attorneys for some of the largest creditors have threatened to bring legal action.

No agreement has yet been reached between the St. Regis Paper Co. and the several locals. No drastic demands have been made by the locals, except that the machinists want a ten per cent increase. The requests from the paper makers mainly affected the third hands.

Surveying Waddington Harbor

Army engineers are making a survey of the harbor at Waddington on the St. Lawrence river with a view to estimate the cost of dredging the harbor so that deep draught ships can land.

The St. Regis Paper Co. maintains an extensive pulp terminal at Waddington, pulpwood being brought up the St. Lawrence from Canada. The Norwood and St. Lawrence R. R., also owned by the St. Regis Co., has its terminal at this point and the pulpwood is distributed over this road to the various mills of the company in Northern New York.

Paper makers' unions throughout the United States and Canada have been notified that nominations for officers of the International Brotherhood will close Aug. 8. It is understood that all the officers will seek re-election.

Frank Barry, first vice-president of the International Brotherhood of Paper Makers, has organized a new local in East Hartford, Conn.

Changes in West End

F. A. Johnson, of Harrisville, succeeds James Breegel as superintendent of the West End Paper Co., at Carthage. Mr. Breegel has resigned to become superintendent of the Oswegatchie Paper Co., at Natural Dam.

The West End and the Oswegatchie mills are owned by the same interests. Mr. Johnson, formerly of Kalamazoo, has been superintendent of the Diana mill at Harrisville for the last year and a half.

Will Supervise Plants

John E. A. Warner, for the last two years engineer of the Deferiet mill of the St. Regis Paper Co., has been named chief engineer of all the St. Regis plants according to announcement made by Corwin T. Jewell, general manager.

Mr. Warner will have charge of all construction work of the St. Regis company and will assist in the planning of mill operations.

Virgil K. Kellogg and Stuart D. Lansing have sold their extensive Adirondack timber holdings to the West Virginia Pulp and Paper Co. There are between 6,000 and 7,000 acres in the tract.

B. B. Taggart has announced that the Oswego mill which he is constructing will be devoted to the manufacture of sewed paper cement bags, while the Watertown mill will continue to manufacture pasted bags. Work is progressing rapidly on the 168-inch machine which the Bagley & Sewall company is building.

Delegate Will Visit Schools

It is expected that some paper maker from Watertown or Northern New York will be named on a committee of five to visit various schools in Canada and the United States where there are courses in paper making. The committee will be named by W. R. Smith, president of the International Brotherhood. Just how the work of instruction will be carried on has not been entirely decided.

It is possible that in some of the larger places where there is considerable interest shown by the members of the local, that classes will be formed where instruction will be received from qualified persons. In other sections the studies may be

Dilts-

HISTORY!

"Simple facts not foolish statements."

One widely known mill on high grade papers who have recently installed ten Dilts NEW TYPE beating engines in their various plants, have had us re-build several of their old beaters into an improved type.

The following letter from them is interesting and speaks for itself:

"In connection with the five re-built beaters installed at the———— Division some few months ago: we have now had these in operation long enough to appreciate the merits of this type of beater. We are able to beat our stock much better than over the old beaters which you replaced. Also the circulation has much improved in spite of the fact that we are able to load these beaters to a greater density. We also find an improvement in the dumping which takes less time and also the stock is more uniform when it reaches the chests.

In other words, we are very well pleased with the change over."

Many mills have similar histories because many beaters are being built over to the Dilts commonsense NEW TYPE.

You should investigate the many Dilts re-building jobs and new installations. You should have the best beaters obtainable because

"Your paper is made in your beaters."

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE - 15 PARK ROW - NEW YORK CITY

Iron Body Valves typical of Jenkins

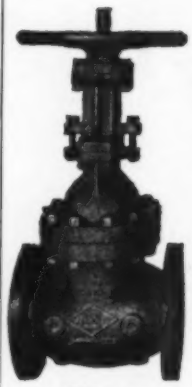


FIG. 304
Flanged, Jenkins Extra Heavy Iron Body Gate Valve

Jenkins Iron Body Valves are made for the maximum service, not merely the average. Each is a typical Jenkins; each does its part in reducing upkeep costs. The metal is analyses-checked; the castings for body, bonnet and other parts are sound, flawless—kept so by an elaborate system of inspection; the machining is precise; the assembly is done with painstaking care. These valves in every detail exemplify Jenkins high standards of manufacture.

Jenkins Iron Body Valves comprise a line which includes valves made in standard, medium and extra heavy patterns in globe, angle, check, gate, Y, and other types. At supply houses everywhere.

JENKINS BROS.

80 White Street .....New York, N. Y.
524 Atlantic Avenue .....Boston, Mass.
133 No. Seventh Street....Philadelphia, Pa.
646 Washington Boulevard.....Chicago, Ill.

JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

MURRAY IRON WORKS COMPANY

(INCORPORATED 1870)

BURLINGTON, IOWA

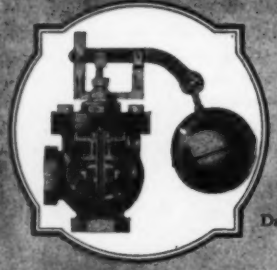
Successful Builders for 56 Years of BOILERS *and* ENGINES

PLEASE SEND US YOUR INQUIRIES

Engines	*Boilers*
CORLISS	INTERNAL - FURNACE
PUMPING	TUBULAR
UNA - FLOW	WATER - TUBE

Our Engine and Boiler Shops are quite independent of each other. ¶ And we Specialize on Boilers the same as we Specialize on Engines.

VALVE MAKERS FOR OVER FIFTY YEARS



Davis Float Valve

Simplicity

... to end tinkering with valves

THE Davis Float Valve is simple, built to serve for a long time without extra attention or expense. This valve has no leather cup packing. The inner valve cannot stick. It will not permit leakage from the top. It closes tight. The inner valve has a hollow post, and is operated solely by pressure. The stem is directly connected to the float by a lever and forms an auxiliary valve that seats in the hollow post. These features mean trouble-free service.

DAVIS VALVE SPECIALTIES
STEAM SAVERS SINCE 1875

G. M. DAVIS REGULATOR CO., 422 Milwaukee Avenue, Chicago, Ill.

P17—Gray

GOULDS

INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

GOULDS PUMPS, Incorporated
SENECA FALLS, N. Y.

PUMPS

MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

GARRATT-CALLAHAN CO.
310 South Michigan Avenue, Chicago

148-156 Spear St.
San Francisco

MAGIC
ESTABLISHED 1904

1328 Broadway
New York City

carried out through correspondence schools. It is expected that the International Brotherhood will bear a portion of the expense and the rest will be borne by those taking the courses.

Forest Patterson, of Galesburg, Ill., recently joined production department of the Flambeau Paper Co., in Park Fall, Wis.

NEW YORK CITY NEWS

International to Sell Stock

The International Paper Co. has arranged for the sale of an additional issue of $15,000,000 seven per cent cumulative preferred stock in the United States and Canada. An early offering of the shares will be made, according to an announcement from the New York headquarters of the company. In connection with the financing, announcement is made also that the company's subsidiary, the Gatineau Power Co., is construction on the Gatineau River near Ottawa three power plants with a designed generating capacity exceeding 530,000 horse-power. Two of these plants are now in partial operation and the third is expected to start operation in the fall of 1928. Another subsidiary has under construction the largest power development in the Maritime Provinces of Canada. These projects are expected to produce substantial increases in earnings of the company.

The capacity of the 23 paper and pulp mills operated by the International Paper Company is more than twice as great as that of any other company in North America. Its timberland freeholds and Canadian Crown timber limit leases cover over 13,408,000 acres, or an area larger than the combined areas of Massachusetts, Connecticut and New Hampshire. They are estimated to contain over 51,500,000 cords of pulpwood. Water-powers in operation or under construction agregate 700,000 horse-power, while the company's potential water-power capacity exceeds 1,500,000 horse-power.

The St. Regis Paper Co., of Watertown, N. Y., has filed notice of an increase in capital from 450,000 shares to 800,000 shares, of which 50,000 shares are valued at $100 each, and 750,000 are common shares of no par value.

Wall Paper Merger Planned

An early merger of four large hanging paper companies as the United Wall Paper Factories, Inc., was forecast by the announcement just made here by the Chase Securities Corp., and Spencer Trask & Co., that they soon will offer an issue of first mortgage bonds to provide funds for the acquisition of the current assets of the companies merged and to provide working capital for the new corporation.

The concerns to be consolidated are the Robert Griffin Co., of Jersey City, N. J.; the Standard Wall Paper Co., of Hudson Falls, N. Y.; the New York Card and Paper Co., of York, Pa.; and the Chicago Varnished Tile Co., of Chicago.

All their fixed properties and other assets have already been acquired by the United Wall Paper Factories, Inc., in exchange for its preferred and common stocks. Winfield A. Huppuch, president of the new corporation, states no change will be made in the custom of conducting merchandising exclusively through jobbers and wholesale dealers. Directors of the company are W. A. Huppuch, Robert B. Griffin, Ethelbert Green, John S. McCoy and Charles W. Kellogg.

Importers Amend Rag Purchase Terms

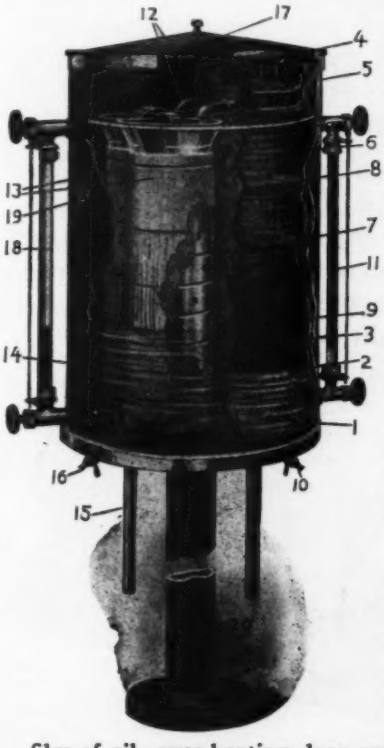
A group of American importers of papermaking rags who are members of the National Association of Waste Material Dealers, Inc., of New York, and on the suggestion of the European Federation of Waste Material Merchants, have modified their rag purchase terms which became effective on January 1 last, whereby the question of tolerance, permitting shippers in Europe to ship 2½ per cent more or

BOWSER

There are 13 reasons

Bearings aren't superstitious—they want clean, cool oil, *continuously*. These thirteen reasons summarize the advantages of Bowser system:

1—Entirely automatic; bearings will always be supplied with oil without attention. 2—Bearings at all times flooded with copious streams of cool, clean oil. 3—Mechanical efficiency of units greatly increased. 4—The oil supplied to the bearing is collected, filtered and used over and over again; practically none is wasted. 5—Lubricating oil becomes an investment and not an expense. 6—Cost of attendance is reduced. It is frequently possible to dispense with the services of several oilers. 7—Wear is practically eliminated as the bearing surfaces float past each other on a film of oil; over-heating does not occur. 8—Depreciation is greatly reduced. 9—The stream of lubricant washes out any foreign substances. 10—Clean. The oil is fed exactly where it is needed. Filtered oil is pumped into overhead reservoirs and circulated through a closed piping system. 11—Fire hazard decreased. 12—Attendants do not have to climb around machinery. 13—The periods between bearing adjustments are materially increased because the oil always has its full lubricating quality.



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S. F. BOWSER & COMPANY, Inc.
LUBRICATION ENGINEERS AND MANUFACTURERS
FORT WAYNE, INDIANA, U.S.A.

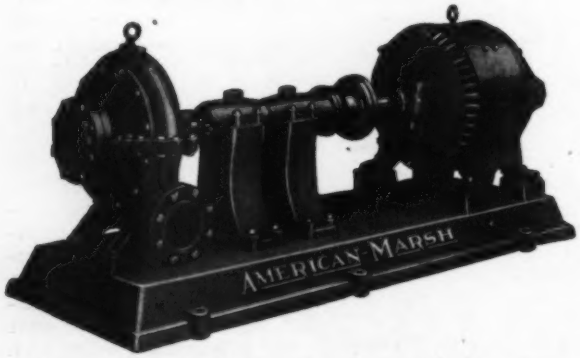
LUBRICATORS-OIL FILTERS-OILING SYSTEMS-ACCESSORIES
OIL STORAGE AND DISTRIBUTION SYSTEMS

A Stock Pump equal to the job

High Operating Efficiency plus Heavy Duty Construction for Faithful Performance

SHOWN below is the new addition to the American-Marsh Line of pumps specially designed and built for paper mill service. This new Type P M Centrifugal Stock Pump is regularly equipped with back plate type open impeller which handles fibrous materials smoothly—without clogging.

It is built in sizes with capacities up to 1800 gallons per minute—accurately tested before shipment and fully guaranteed both in respect to rating and performance. Write for complete information, specifying your conditions.



Note the ruggedness of this equipment—ability to deliver with minimum attention. Note generous size of bearings and bearing supports—case and bearings horizontally split—both pump and motor mounted on one base of heavy construction.

WE BUILD FOR THE PAPER MILL:
Centrifugal and Steam Pumping Equipment of all types to satisfactorily meet every pumping problem as encountered in paper making.

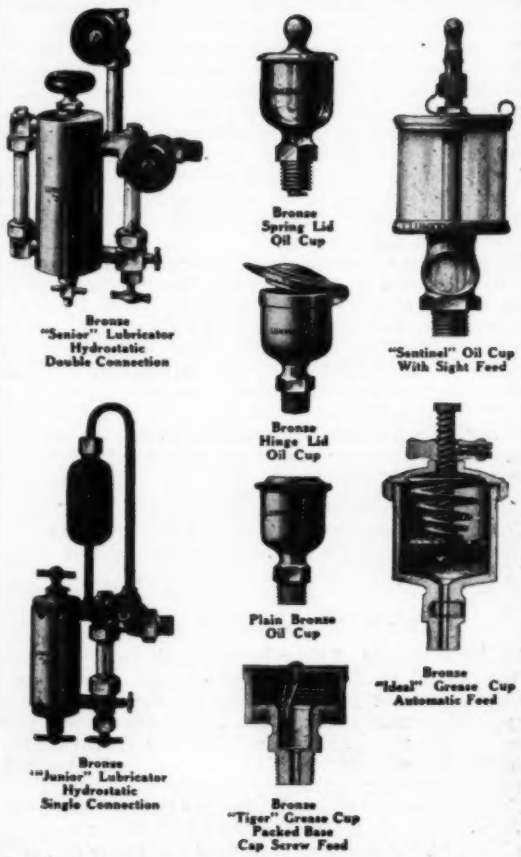
AMERICAN-MARSH

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN
Sales Engineers in All of the Principal Cities

Centrifugal Pumps

Effective Aids in the attainment of Efficient Lubrication

LUNKENHEIMER
LUBRICATORS
OIL CUPS AND GREASE CUPS


Bronze "Senior" Lubricator Hydrostatic Double Connection
Bronze Spring Lid Oil Cup
"Sentinel" Oil Cup With Sight Feed
Bronze Hinge Lid Oil Cup
Plain Bronze Oil Cup
Bronze "Ideal" Grease Cup Automatic Feed
Bronze "Junior" Lubricator Hydrostatic Single Connection
Bronze "Tiger" Grease Cup Packed Base Cap Screw Feed

The Lunkenheimer Company manufactures a complete line of Lubricators, Oil Pumps, Oil and Grease Cups, in a wide range of types, sizes and capacities.

Lunkenheimer Distributors are located in all industrial centers and carry complete stocks. They will fill your requirements promptly.

THE LUNKENHEIMER CO.
"QUALITY"
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22023-22-67

less than the quantity contracted for, has been conceded, and whereby letters of credit for 100 per cent of the purchase price can be opened by special arrangement between buyer and seller on certain specified commodities, including bright burlap bagging for papermaking, wool tares, heavy bagging, wool pouches, old gunny bagging, and flax, jute, linen and hemp wastes and threads.

The agreement on terms continues to provide, however, that letters of credit of but 90 per cent of the purchase price of rags are to be opened by importers.

Lindbergh Stimulated Newsprint Use

According to the Salesmen's Association of the Paper Industry, Col. Charles A. Lindbergh was more than an ambassador of American good-will; he was the messenger of prosperity for the American paper industry as well. It is estimated that the tremendous interest in Col. Lindbergh's feat and reception on his return from Europe caused newspapers in the United States to use in a period of several weeks 25,000 tons of newsprint in addition to their usual consumption.

At the contract price of newsprint is $65 a ton, this means that the value of the extra output sold by paper manufacturers was $1,625,000. The total of 25,000 tons is based on a nation-wide study with methods found reliable by the paper industry.

Ruberoid Company to Expand

Directors of the Ruberoid Co., manufacturers of roofing and building felts and papers, have notified stockholders of a meeting on July 11 at which a recommendation will be submitted for reclassification of the capital stock into stock of no par value and an increase in the authorized number of shares from 35,180 to 150,000 shares. With the approval of this proposition, 35,412 shares of the additional authorized stock will be offered to stockholders at $50 a share on the basis of one new share for each share now held. There will be 70,284 shares outstanding and 79,716 reserved. The company proposes to enlarge its plant at Bound Brook, N. J., and to acquire a substantial interest in a felt plant to be built near Philadelphia.

Abner Koplik, of Castle & Overton, Inc., importers of papermakers' supplies of 200 Fifth avenue, New York, returned from a business trip to Europe on June 8. Mr. Koplik reported experiencing difficulty buying papermaking rags in most parts of Europe owing to market prices there being above a parity with values prevailing on this side of the Atlantic.

The Frank L. Scott Co., mill agents and distributors of paper and paper products, 270 Madison ave., New York, has been incorporated under New York State laws as the Frank L. Scott Co., Inc., with a capital of $250,000 preferred stock and 5,000 shares of common stock.

Harold Early, formerly with the Harper Paper Co., of New York, is now a member of the sales force of the International Paper Co.

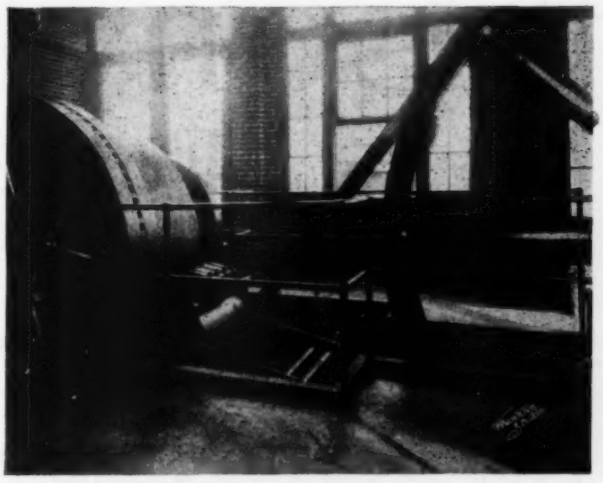
Frank Riessman, for eight years credit and office manager of the Maurice O'Meara Paper Co., Inc., has been appointed credit manager for the Forest Paper Co., of 334 Hudson street, New York.

Daniel J. O'Connell

Daniel J. O'Connell, president of the Box Board and Lining Company, 10 Grand street, New York, died suddenly at his home in Hackensack, N. J., on June 27. Mr. O'Connell was ill only for a couple of days, and his sudden demise came as a great surprise and shock to his wide circle of friends in the paper and board trade of New York City and vicinity. He

The LENIX Drive

(Trade mark Reg.)



400 H. P. Diesel Oil Engine Driving Ammonia Compressor

ENGINE PULLEY 96" dia. x 30" face 200 RPM

COMPRESSOR PULLEY 180" dia. x 30" face 106 RPM
Pulley Centers 18'0".

THIS Lenix is used in connection with a 400 H. P. Diesel Engine driven compressor. The very nature of these large units necessitates a flexible driving medium. The automatic action of the Lenix in adjusting itself to each stroke of the engine and compressor makes it certain that the proper belt tension is maintained in the slack side of the belt. Belt slippage is positively eliminated. Note the large arcs of contact of the belt with the pulleys.

In addition to providing resilient and efficient transmission of power from the engine to the compressor, this Lenix made it possible to install the units on centers of only EIGHTEEN FEET, approximately one third of that which would be necessary were an efficient and reliable open belt drive installed. The building is now considerably smaller than originally contemplated.

The saving in power and maintenance costs and the increased capacity of the belt effected by the use of the Lenix represent continuous money savings.

The Lenix is in use in more than eighty paper mills in the United States and Canada. Where two or more beaters are driven by one motor, either vertically or horizontally, the Lenix gives an independent operation of each beater that is not obtainable with any other method of group drive. One beater may be stopped without interfering with the others. The Lenix compensates for sudden and wide variations in the load caused by impurities in the stock treated, as well as for changes in belt lengths caused by uneven stretch.

The Lenix is the pioneer short center belt drive. More than eight thousand Lenixes are now installed in practically every industry on drives ranging from 1 H. P. to 1400 H. P. A number of these Lenixes are still in daily service after more than twenty years of operation. This is proof of the reliability and the soundness of design and construction of the Lenix. Our experience, the result of twenty-one years of designing and building Lenix drives, is offered for the solution of your belt drive problems.

A card will bring you full information.

F. L. SMIDTH & CO., Inc.

Engineers

50 Church St., New York, N. Y.

Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company
(Collinwood Station) CLEVELAND, OHIO

See page 363 in the 1926 Paper and Pulp Mill Catalogue

1864 1927

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

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CAMDEN, MAINE

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BULKLEY, DUNTON & COMPANY
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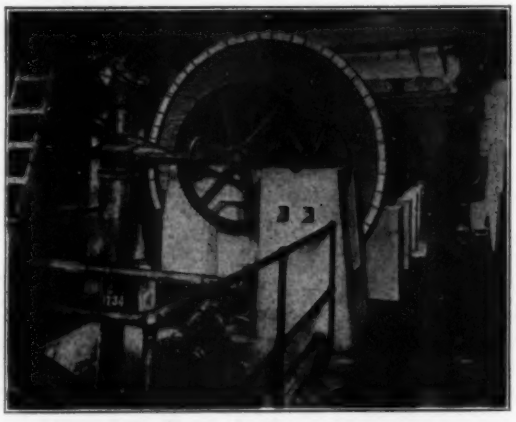

Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

had been affiliated with the box board industry for some 30 years, and had headed his own concern for 15 years or longer. The funeral was held on June 29 in Holy Trinity Church on Maple avenue in Hackensack, and was attended by a large number of board and paper merchants. A widow, a son and a daughter survive.

Henry P. Browning

Henry P. Browning, president of the H. P. Browning Paper Co., of 1133 Broadway, New York, and a well known figure in the metropolitan paper trade, died suddenly on June 7 in a room in the National Republican Club at 54 West Fortieth street, New York, where he had gone a few minutes before from his office.

Mr. Browning was 67 years old, and lived at 37 Madison avenue, Montclair, N. J. His company was mill representative of the Kennedy Paper Bag Co., Indianapolis, Ind.

William A. Stuart

William A. Stuart, retired paper merchant and formerly a partner in the firm of Brown & Stuart, of Cincinnati, O., where he resided for fifty years, died on June 13 in Albany, N. Y., of heart disease after a long illness. Mr. Stuart was 69 years old and, was widely known among paper dealers and manufacturers, having been in the paper trade for close to a half century.

Harry W. Draudt, formerly with Parsons & Whittemore, Inc., is now connected with Bulkley, Dunton & Co., 75 Duane street, New York, as a member of the wood pulp sales staff, and will travel among the paper mills in the Middle West.

The Baxter-Lane Paper Corp., 90 West Broadway, New York, has been appointed exclusive sales agent for the products of the Saxer Paper Mills, Inc., of Skaneateles Falls, N. Y. It is planned to make colored specialties at this mill. mostly in shades and grades of black.

The International Paper Co., has declared regular quarterly dividends of 1¾ per cent on seven per cent preferred stock of the company, and 1½ per cent on the six per cent preferred, both payable July 15 to holders of record on July 1.

The Sanitary Paper Supplies, Inc., of 220 Fifth avenue, New York, has filed notice of an increase in capitalization from $10,000 to $30,000 to provide for contemplated expansion.

Binders' Board Association Activities

The Binders' Board Manufacturers Association met for luncheon at the Canadian Club, New York, on Thursday, June 23, to discuss trade conditions, co-operative advertising and further efforts to secure standardization of stock sizes.

The association through Mr. T. J. Burke, secretary of the Cost Association of the Paper Industry, is making a cost survey among its member mills with a view to preparing a uniform cost accounting method which will cover all items of cost in the manufacture of binders board and which can be used by the members of the association.

Paperboard Industries July Meeting

The next meeting of the Paperboard Industries Assoc., will be held at the Westchester Biltmore Country Club, Rye, N. Y., July 20 and 21 next.

On Wednesday, July 20, there will be a meeting of the of the Paperboard Group in the morning and of the Folding Box Group in the afternoon. The Container Group meeting will be held on Thursday morning, July 21, and the General Meeting of the three groups in Joint Session convening on Thursday afternoon.

Rhoads Tannate Leather Belting

Tannate Reduces His Care

A NEW YORK paper mill superintendent says we solved his waterwheel generator problem when we sold him a 12-inch, 2-ply Rhoads Tannate Watershed Belt to take the place of an 18-inch, 8-ply rubber.

It has been running over two years, delivers the required power and gives no trouble.

The superintendent assured our representative that this drive is no longer on his mind.

They now have four other Rhoads Tannate Leather Belts and promise more orders as belts are needed.

There is nothing like a Tannate Belt to "sell" Tannate Belting.

J. E. RHOADS & SONS

PHILADELPHIA.....47 North Sixth Street
NEW YORK.....112 Beekman Street
CHICAGO.....334 West Randolph Street
ATLANTA.....80 Forsyth St. S. W.
CLEVELAND.....1234 West Ninth Street

Factory and Tannery: Wilmington, Del.

Direct connected pump and motor of improved design and heavy construction for pumping pulp and thick stock. OPEN IMPELLER TYPE. HORIZONTAL SPLIT CASING. Interior surfaces machine finished. All bearings are removable from shaft without taking off any other part.

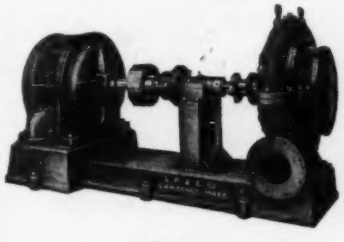

Fig. 67

We build Centrifugal Pumps exclusively—for all requirements

Write for Catalog 5 B

LAWRENCE PUMP & ENGINE CO.

P. O. Box 708 Lawrence, Mass.

You Can't Spell "PERFECTION" Without a "P"

Neither Can You Obtain It Without the Right Type of Roll---Ours Is the Right Type

STOWE & WOODWARD COMPANY

The Rubber Roll Makers

NEWTON UPPER FALLS, MASS., U. S. A.

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

NO FELT MARKS—

With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

FITCHBURG DUCK MILLS

ESTABLISHED 1844

54 Duck Mill Road FITCHBURG, MASS.

Sirocco

Hood Systems and Heat Economizers, Heating, Ventilating, Air Conditioning and Vapor Absorption Equipment.

Descriptive Bulletins on Request

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NEW YORK DETROIT · ATLANTA · CLEVELAND · SAN FRANCISCO

Will Not Harden or Rot

EBONITE Keeps Joints Tight

Ebonite Sheet Packing is thoroughly dependable and long-lived whether on hot water, steam, air, acid or oil lines. It is made of a special compound and will not deteriorate under highest pressures and temperatures.

Ebonite is recommended for lines under excessive vibration or subject to unusual expansion or contraction.

If your dealer cannot supply you promptly, write us.

Quaker City Rubber Co.

Wissinoming, Philadelphia.

Branches: New York, Chicago, Pittsburgh, San Francisco

WISCONSIN NEWS

Marathon Acquires Menasha Concern

One of the largest deals in recent years in Wisconsin was the sale of the Menasha Printing and Carton Co., of Menasha, to the Marathon Paper Mills Co., of Rothschild.

This transfer combines the large paper mill of Rothschild and its great sources of raw material with a concern that has an extensive trade territory and a large sales organization.

The Menasha Printing and Carton Co., headed by G. S. Gaylord, manufactures waxing papers and plain and printed specialties. It purchased an additional paper mill at Ashland two years ago.

G. O. Babcock, vice-president of the Wood Country National Bank, has been elected to the board of directors of the Nekoosa-Edwards Paper Co., Port Edwards.

Eddy Paper Co. stockholders have indorsed an increase in capital stock from 125,000 to 165,000 shares of no par value for the purchase of the Kieckhefer Container Co., of Milwaukee.

D. C. Everest, president of the American Pulp and Paper Association and general manager of the Marathon Paper Mills Co., was recently presented with the annual award conferred by the Wilart meeting, for having performed the most outstanding personal service to the paper industry. The prize was a large ship model.

Kotex Co. employees, Neenah, have been presented with cash bonus as a reward for their good safety efforts. The plant did not have a lost time accident for a year, and this is the third time they have won that prize.

The Northern Paper Mills of Green Bay went through the month of May without a single day's lost time through accident. It was the company's first perfect month since it began keeping safety records and is a record of prominence for the Fox River Valley as well. The mill employs nearly 600 persons. Its previous low mark was 25 days of lost time through accidents.

An intensive campaign of safety has been launched in the Peshtigo Paper Mills with the slogan, "Safety Always." A thorough survey of the plant will be made in an attempt to minimize hazards in the paper mill. P. M. Allen, receiver of the company, is determined to make this plant second to none in safety conditions.

Practically all the officers of the Moloch Machine and Foundry Co., Kaukauna, manufacturers of paper mill machinery, were re-elected at the annual meeting held recently. R. M. Kanik is president and general manager. A dividend was declared, the first since the organization of the company. Reconstruction work is in process to repair damages incurred a month or two ago by a large fire.

Nicolet Mill Almost Ready

At the present rate of construction work and installation of new machinery, the Nicolet Paper Co., which a few months ago purchased the De Pere plant of the American Writing Paper Co., will be ready to begin operations about the middle of August as anticipated.

Two large machines producing high grade glassine and grease-proof paper will be operated. These machines had to be practically rebuilt for the purpose. They are of the very latest type. Among the new equipment also are three super calenders, four heavy type rewinders, all electrically driven. The power machinery also is being improved.

S. R. Stilp, manager of the Kimberly-Clark Co. mill at Niagara Falls, New York, has been transferred to the Spruce

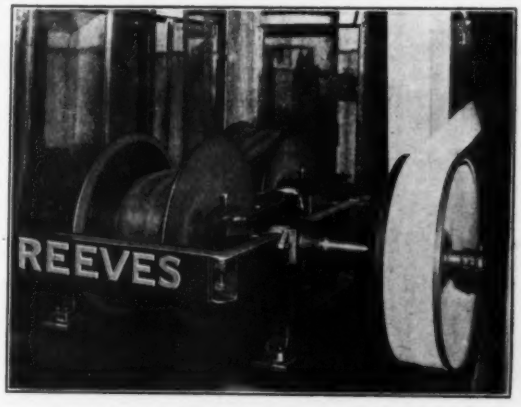


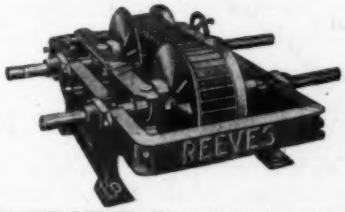
Photo shows a REEVES Transmission which operates a 79-roll loft drier at the Gilbert Paper Co., Menasha, Wis.

Accurate Control for Uniform Production

ANYTHING from tissue to wrapping paper can be made on machines driven by the REEVES Variable Speed Transmission, and each grade of stock will be uniformly high grade. The REEVES gives the fine, steady, accurate graduations of speed which enables you to run your machinery at just the right speed always for any different weight.

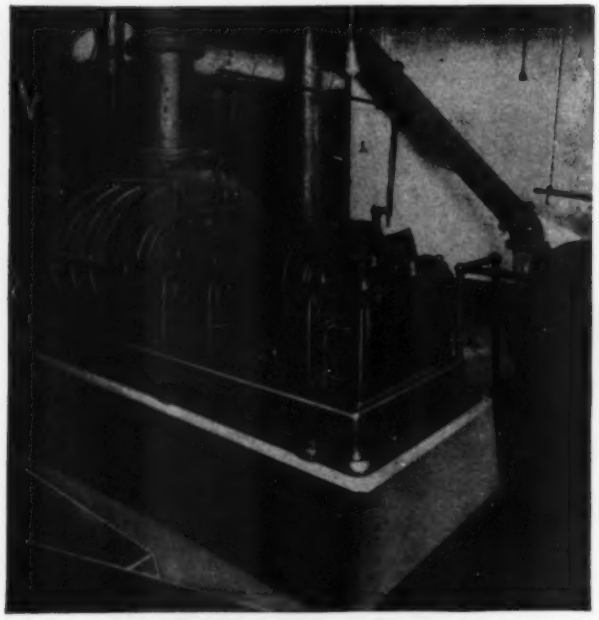
On fourdrinier and cylinder machines, on cutters, winders, slitters, and on pasting machines, the REEVES Transmission will eliminate waste and increase your production efficiency. Our catalog A-66 gives full information about the uses and advantages of the REEVES in the paper industry. Write for it today.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission



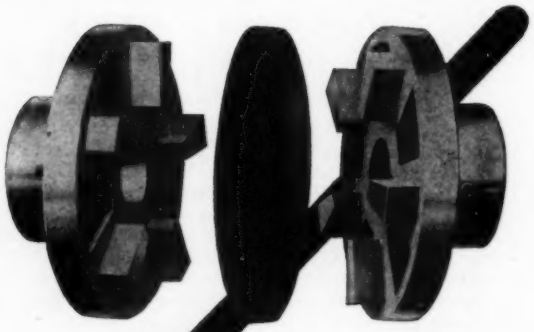
ROOTS

Rotary Pumps

Where dependability counts—that's where you'll find Roots Rotary Pumps. They're not the cheapest to *buy*, but they're the most economical to use—economical in power consumption, in maintenance cost, and because you *know* they'll be right on the job when you need them most.

For vacuum service or for handling liquids and stock, you can't buy better. Ask for a bulletin covering pumps for your particular service.

The P.H.&F.M. ROOTS CO.
DEPT. 10
CONNERSVILLE, IND.
Chicago Office 130 S. Michigan Ave. *New York Office* Room 800-120 Liberty St.



Wood's FLEXIBLE COUPLINGS

SEVENTY YEARS OF SERVICE 1857 W 1927

Absorbs Destructive Strains Like a Sponge Absorbs Water

WHEN direct connecting your motor to its load, the simple precaution of using Wood's Flexible Couplings will save you many dollars in repairs and add years of life to your equipment.

These couplings protect both ends of your equipment—the motor and the machinery it drives by absorbing the destructive vibration set up by the intermittently loaded machinery and the resulting power surges of the motor.

Note the construction of Wood's Flexible Couplings shown above, consisting of two cast iron flanges with lugs cast integral and a multi-ply specially constructed leather disc.

It is this disc that absorbs all the punishment saving your motor and machinery all wear and tear.

Only in Wood's Flexible Couplings do you get Wood's dependability.

T. B. Wood's Sons Company
Chambersburg, Penna.

Write for Descriptive Catalog

Falls Pulp and Paper Company, of Kapuskasing, Ont. His place at Niagara Falls will be taken by J. Leslie Sensenbrenner of the Neenah home office.

L. M. Alexander, Port Edwards paper mill owner, has been re-elected president of the board of trustees of Lawrence College, Appleton. Ben Alexander, Wausau paper mill executive, has been added to the board.

Satisfactory progress has been made in the conservation efforts of the Nekoosa-Edwards Paper Co., Port Edwards. This company maintains a fish hatchery on Nepco Lake and this spring had 250,000 young rainbow trout ready for distribution in streams of that locality. The work of this company has been warmly commended by the state conservation commission.

The Northern Paper Mills recently went through 37 days of mill operation without being harassed with a single lost-time accident. In the past, each department has gone singly 60 days without an accident.

The Patten Paper Co., Appleton, has indorsed the Citizens' Military Training Camp idea and will permit any of its eligible employees to attend camp.

Menasha Paper Mills Co., Menasha, has had a new railroad side track built at its plant to provide more storage facilities for straw.

Jere D. Witter, son of Mr. and Mrs. I. P. Witter, Wisconsin Rapids, has accepted a position with the Crown-Willamette Paper Co., at Portland, Ore. I. P. Witter was until recently one of the principal stockholders of the Consolidated Water Power and Paper Co.

On May 9, 10, and 11, the annual negotiations between the labor union representatives and the Consolidated Water Power and Paper Co., of Wisconsin Rapids took place.

Research work in pollution carried on by a joint committee of paper mill representatives and state officials for the past year will be extended, it was decided at a meeting of the committee in Milwaukee recently. Definite problems will be studied in certain mills this year.

R. M. Sensenbrenner, secretary to George A. Whiting, Neenah paper mill executive, has been elected a member of the board of directors of the Menasha Vocational School.

An extension has been built by C. R. Meyer Co., Oshkosh, to the finishing room of the Neenah Paper Co., of Neenah. The new part, built of brick and stone, is 50 feet wide and 70 feet long.

W. A. Kelly, Northern Paper Mills superintendent, Green Bay, has been granted a patent on a pulp web cutter which he has invented and which is expected to effect a material saving over old methods used.

Court Appeals

The Fox River Paper Co., Appleton, and firms associated with it in maintenance of the middle dam in Appleton, have lost their case which they appealed to the United States Supreme Court in an attempt to compel the Wisconsin Railroad Commission to issue them a permit for the reconstruction of their dam. The commission refused to give a permit unless the company submitted to the recapture clause of the state water power act.

An appeal by the Nekoosa-Edwards Paper Co., of Nekoosa and Port Edwards, from a decision of the Wisconsin Railroad Commission is pending in circuit court. It bears on the dam erected by the company to supply a reservoir. The commission declares that the company must submit to the recapture clause of the water power act, but the company

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RUST PROOF!

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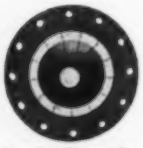

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insists that Four Mile Creek on which the dam was built is not a navigable stream and therefore not affected by the recapture clause. Hearing of the case was delayed while the Fox River Paper Company case was pending in the United States Supreme Court.

MICHIGAN NEWS

River Raisin's New Power Plant

River Raisin Paper Co., Monroe, Mich., have just completed the installation of three 1,296 h. p. Erie City water tube boilers and pulverizing units, under the supervision of Grant E. Miller, chief engineer.

With the new boiler plants and pulverizing units, the saving of waste is easily seen, and with the new system, progress is expected at an unusually high pace. To deliver the 7,100 h. p. with the new boilers it requires 245 tons of coal fed automatically to them. 400 tons had to be laboriously fed into the old boilers to produce 6,590 h. p., and sixty men needed to operate the old equipment, whereas but 17 are now needed in the boiler room.

Clarence L. Harter, for several years superintendent of the Rex Paper Co., has been appointed production manager of the Watervliet Paper Co., Watervliet, Mich. He was formerly assistant superintendent of the Watervliet Paper Co. His successor at the Rex Paper Co. is Arthur Cole, with the company for 10 years.

First Printer's Air Tour

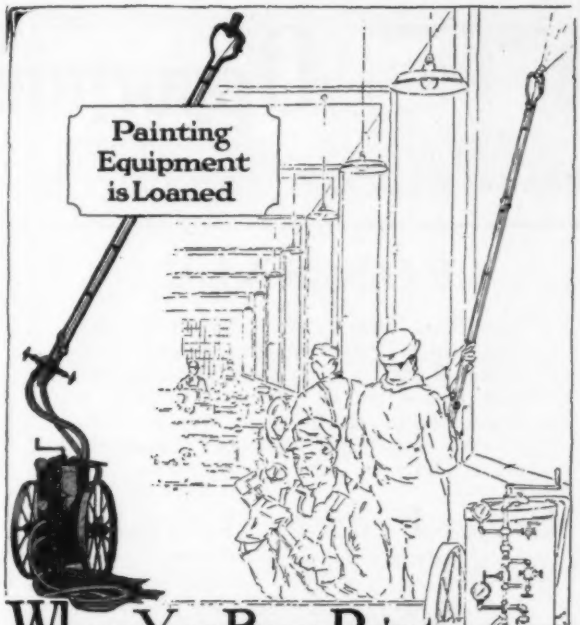
For the first time in the history of the paper industry, the aeroplane was used as a means of transportation between the paper consuming industry and the manufacturer. Seven printers of Detroit, Mich., were carried on June 23 from Detroit to the Rex Paper Co.'s mill in Kalamazoo for inspection of the plant. The trip was fostered by the Butler Paper Co., the Union Paper & Twine Co., both of Detroit, in conjunction with the Rex Paper Co.

Those making the trip were Louis Maxon, Herbert Wolf, John Mulford, Sam T. Ford, Harry Keyes, Charles Rehm, and

Party making the trip—just as members alighted from plane

Russell Curtis, all of Detroit. The seven with Pilot Swanson and Mechanic Berger, composed a total part of nine, the largest number ever carried in an aeroplane out of Detroit.

The occasion was regarded as a red letter day in the history of aeronautics, and a committee composed of Secretary Earl Weber, Director William Lawrence, and Director R. E. Fair, of the Chamber of Commerce, met at the field. President Merrill B. King, and John R. Robinson, sales manager, officials of the Rex Paper Co., also met the party. The party took from the field at 10:10 and arrived at the Kalamazoo airport at 12 o'clock. For two hours the printers inspected the mill, viewing all the steps in the manufacture of various grades of coated paper. The party left the mill at 3:30 and



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One Fourdrinier machine. Wire 96"x50'. 2 presses; 15 dryers, 48"x94"; one calender; reel; two drum winder; marshall drive.

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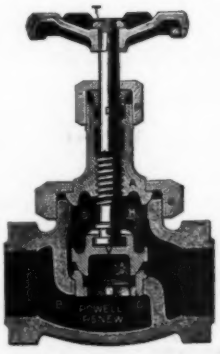

Fig. 100

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departed for Detroit shortly before four o'clock, arriving at Dearborn fields, Detroit at 4:30.

Russell Curtis, in commenting on the trip stated that this was the first time in the life of the industry that a group of printers went to the source of their paper supply via aeroplane, and the trip was just as smoothly operated as any railroad excursion, with only one-fourth of the gasoline supply used on the trip. This event will undoubtedly mark the beginning of other trips of customers to paper mills.

William Toland, formerly advertising manager of the K. V. P. Co., has resigned to enter the specialty selling field. His succesor at the parchment plant has not yet been named.

Large Turbine for Kalamazoo Paper Co.

What will be the largest turbine operated by any paper mill in the Kalamazoo River Valley has been ordered by the Kalamazoo Paper Co., and will be installed soon.

The turbine just ordered is a 4000 k.w. General Electric unit, and to make room for the structure, the large water tower and tank at the rear of the office is being removed.

John Winterburn, chief engineer at the King Division of the Allied Paper Mills, has been given complete charge of the Monarch steam plant, making him in charge of steam power plant at both the Monarch and King divisions of the Allied Mills. Carl Ritter, for the past seven years chief electrician at the King division, has been put in charge of electrical work at both the Monarch and King divisions.

R. P. Shimmin has been appointed assistant to the Chairman and the President of the Link Belt Co., Chicago. Frank B. Caldwell of the same company has been appointed sales manager with headquarters at the Chicago plant office, 300 W. Pershing Road, Chicago, and will have supervision over all sales activities in the Western division.

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

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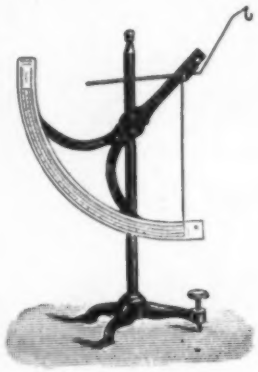
World Standard Paper Testers



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Uniformity of beating means bet- -- paper.

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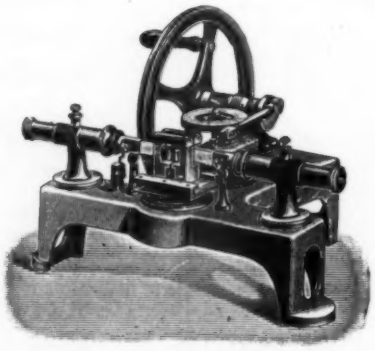
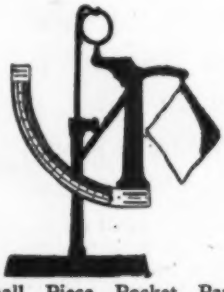
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.

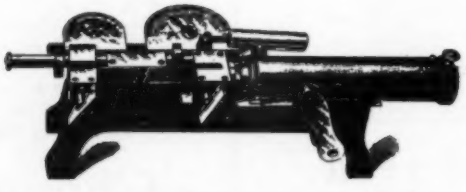


Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester



Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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Technical Developments in the Paper Industry

Domestic and Foreign

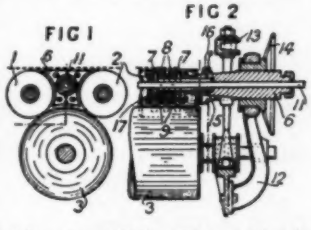
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Suction Apparatus in Paper Making Machine

IN SUCTION boxes for paper, cardboard, cellulose and similar machines, wherein three rollers (1), (2), (3), are used together with adjustable end pieces (6) to accommodate the machine to different widths of paper, etc., being made, the suction box is made more air tight by using end pieces formed of a number of plates (7) alternating with similar smaller plates (8), the latter leaving spaces (9) communicating by holes (17) with spaces (15) to which fluid under pressure is supplied by pipes (16). The suction is effected in supports (12) in the frame (13) and are adjusted by hand wheels (14). British Patent No. 267,147.

FIG 1

FIG 2

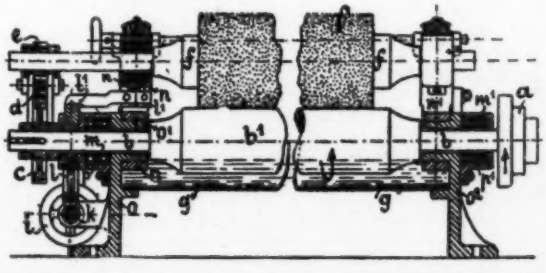


Moistening Arrangement in Paper Making

THE moistening arrangement, which is described in German Patent No. 441,146, consists of a brush roller which rotates over another roll and which is adjustable by means of screw segments.

As may be seen from the accompanying illustration, the moistening device is driven by means of the steeped pulley (a) which drives the lower roller (b′) by means of the shaft (b). The rotary motion of the lower roll (b′) is carried over to the upper brush roller (f) by means of the geared wheels (c), (d) and (e), so that the latter attains the same rotary motion as the lower roller. This then makes it possible for the water, which is carried along by the lower roll from the pan (g), to be centrifuged on to the upper brush roller (f) and in this manner produce the required water mist. In order to make it possible for the water mist (h) to act at different angles, the upper brush roller (f) must be able to be arranged in different positions with respect to the axis (b). This is accomplished by means of the handwheel (i), and the screw (k) through which the screw wheel (l) and the arm (n), to which the bearing of the upper brush roller is attached, can be adjusted at will.

In order to make possible the building in of a ball bearing



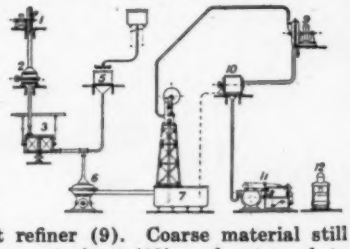
into the bearing housing (o), the screen segment (l) is divided according to this invention and both of its two parts are connected in a rotatable manner with the ball bearing housing (p) which is connected with the bearing block (o). The segment (l) therefore consists of two parts. The lower part of (l) is therefore formed in the shape of a screw wheel, while the upper portion (l′) is in the form of an elbow which is firmly connected with the arm (n), and hence rotates this arm (n) of the upper brush roller on rotating of the screw segment (l) about the part (o′) of the bearing block (o) and around the axis of the lower roller (b′).

The ball bearing (m) is built in entirely independently of the segment (l) and the arm (m) in the housing (p). The carrying-over of the rotary motion of the screw segment (l) to the arm (n) is consequently no longer accomplished by the bearing block (o), as shown in Figure 1, by externally of this by means of the elbow (l′). This arrangement makes it possible to give the lower roller (b′) a solid ball bearing (m).

The second ball bearing (m′) is likewise built into the housing (p′) which is firmly connected with the second bearing block (o³). The transmission of the motion to the second arm (n′) is accomplished in the usual manner. German Patent No. 441,146.

Preparing Wood Pulp

IN THE manufacture of wood pulp from logs, boards, wood shavings or wood waste, the raw material, holding its natural moisture, is cut up or otherwise comminuted in a machine (1). (See accompanying illustration.) Then it is passed into centrifugal machines or disintegrators (2) where it is further subdivided. Broken fibers, sand and other impurities are best separated in a sifting machine (3). Further subdivision into coarse bundles of fibers is next effected in a dry refiner (6) wherein heat is generated by friction, the natural moisture content being previously restored if desired in a chamber (5).



Enough water is added in a vat (7) in order to make a thick pulp, and the pulp is then pumped into a wet refiner (9). Coarse material still present is separated by a strainer (10) and returned to the vat (7), and the strained pulp passes to a drier in the form of a single cylinder machine (11) where it is sheeted and it may afterwards be prepared for the market in a press (12). Alternatively the refined pulp may pass direct to a beater and be made into paper, the drier (11) and press (12) then being dispensed with. British Patent No. 267, 107.

Dehydration of Sulphite Spirit with Quicklime

A METHOD depending upon the elevation of the critical separation temperatures of alcohol-petroleum mixtures by the addition of small quantities of water was used to investigate the dehydration of liquid and gaseous sulphite spirit by lime. A curve for the critical separation temperatures of a series of alcohol-petroleum-water mixtures of known water content was first obtained, and similar temperatures observed for sulphite spirit mixtures then gave directly from the curve the water content of the spirit.

The lime was found to be more effective the less its water content, that is the better it is burnt, marble lime being somewhat less efficient than equally well burnt, but less dense mortar lime. The most favorable proportion for the dehydration is 125 per cent of the theoretical amount of lime necessary. As less than one per cent of alcohol remains in the lime

Koegel's Patent Ball Bearing

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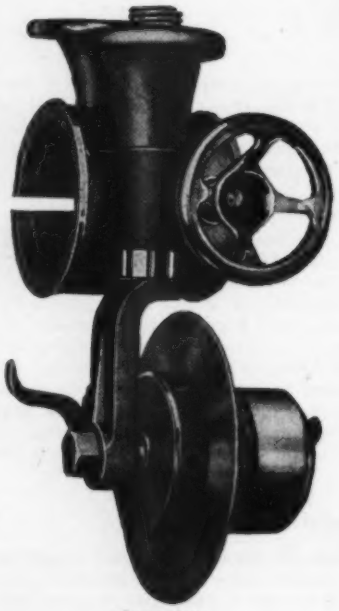

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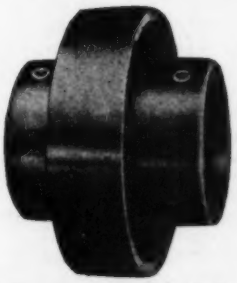

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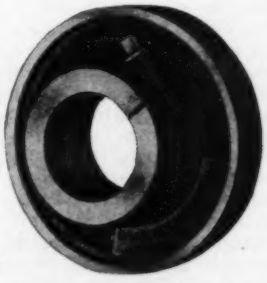

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Southern Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
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Vera Chemical Co. of Canada, Ltd., Freeman, Ontario.
Vera Chemical Corporation, Stoneham, Mass.
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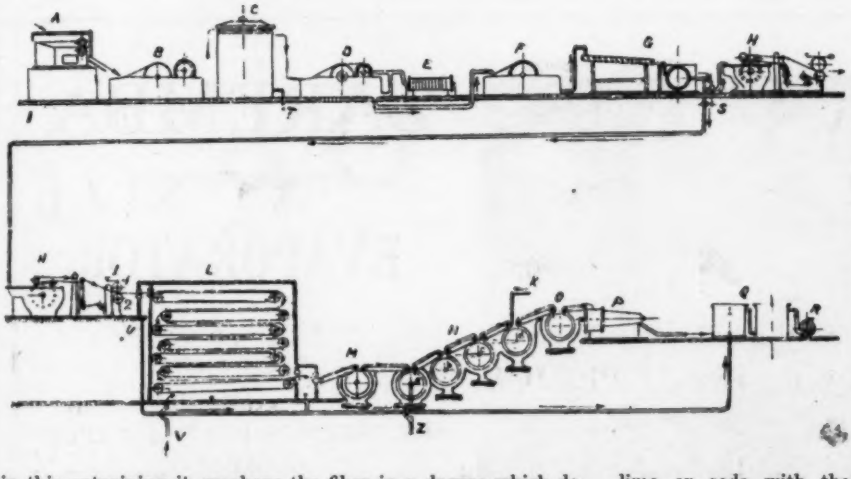
Pochins & Paper Makers Chemicals, Ltd., Erith, Kent and Manchester, Eng.

before the combined water passes over, the distillation yield is approximately 99 per cent. For gaseous spirit with like heated at 100 degrees C, contact for fifteen seconds sufficies to dehydrate a spirit from six per cent to 0.5 per cent water content. In this case, however, the lime increases in volume about five fold through slacking. Furthermore, it disintegrates into a very fine powder which is carried over during the distillation, and requires several days to settle out. The advantage of this method consists in the possibility of a continuous process, and still more in the saving of the total heat of vaporization of the alcohol, which for one kilogram amounts to about 270 kilogram calories. The disadvantage lies in the increased space required for treatment in the gaseous state. Papierfabrikant, 1927, volume 25, pages 180-3.

Paper and Board from Wood and Other Vegetable Fibers

THE new process of making paper, board or pulp from wood and other vegetable materials, which is patented in French Patent No. 618,028, is based on the four following considerations. In the first place the vegetable fibers in general, and notably the straws, are easily attacked and disintegrated by steam at a high temperature without having recourse to any alkali or any of the other chemical reagents. In the second place, the fibers that are obtained in this manner in the form of ribbons of slight thickness and moisture content, are easily attacked by chlorine in the gaseous state, which can in a few minutes separate all the incrustating matters that envelop these fibers in the form of a chloride of lignose. In the third place, the chloride of lignose, which is formed in this manner, can be easily removed, even by such a weak alkali as lime.

Finally the cellulose fibers of straw, notably those of wheat straw, contain a considerable quantity of silica which constitutes one of the organic constituents of the elementary fiber. Consequently when this silica is eliminated by alkaline treatment, in the manner described above, a capital error is committed, for the alkali, in combining with the silicon and



in this entraining it, weakens the fiber in a degree which depends on the quantity of silica that is removed from the fiber.

There are thus two principal phases in this new process. In the first phase a mash is prepared which can be converted into wrapping paper as well as commercial board. In the second phase, in place of drying the board, it is introduced into an installation for conversion into pulp.

The operations are carried out in the apparatus which is shown in the accompanying illustration. The straw hacking machine or wood disintegrating is shown at (A). The material then passes through a washer (B), where it is washed with clean water, preferably hot, the purpose of the operation being to clean the wood, impregnate it and soften it. Then the material goes to the autoclave (C) in which it is subjected to the action of steam at a pressure of six atmospheres for a period of two to four hours. The material then passes into the washing machine (D) and then through the filter (E) where the water is separated from the fibers. The sand and other impurities in the fibers are eliminated in the apparatus (G), while (F) is a refining engine.

The product at this point in the operations is a crude pulp which may be used for making wrapping papers and board which is accomplished in the machine (H) and completed in the machine (I) where the product is given the proper moisture content by subjection to pressure between rollers.

The pulp can, however, flow through the opening (S) into the paper making installation which is outlined in the lower part of the illustration. This consists first of a chlorinating apparatus (L) where the pulp ribbon is subjected in a continuous passage to a stream of gaseous chlorine. The chlorine which is not absorbed by the material is removed by means of the fan (R) and is circulated through an absorption tank (Q) which contains milk of lime, the chlorine being thus converted into hypochlorite of lime. (M) is an apparatus in which the chlorine-treated pulp is subjected to the action of a current for the purpose of removing the hydrochloric acid which is formed during the chlorination, and (N) is an apparatus in which the ribbon is subjected to systematic washing or treatment with a solution of soda or lime of variable concentration. The drum washer is seen at (O) through which the finished ribbon passes, ready for subsequent treatment and conversion into paper.

Recovering By-Products Contained in Bisulphite Liquors

THE sulphite pulp waste liquors which are obtained by the chemical treatment of wood come out from the digesters loaded with all sorts of substances. The recovery of these substances as well as the sulphur contained in the liquors as well is a matter which has interested paper technologists for some time past.

Many new processes have been patented on the recovery of values from sulphite cellulose waste liquors but these have not been applied in practice for the reason that they were too costly. The process which is patented in French Patent No. 619,861 has for its express purpose the recovery of these products by economical means.

By this process pitches and tars are obtained which can be used in building roads and agglutinants in making coal briquettes and the like. It also allows the recovery of the sulphur which is present in the free state in the liquor and utilizes it again for the manufacture of sulphurous acid and bisulphite of lime. It also permits the recovery of resins, either after or during the removal of the sulphur, the liquor being subjected to chemical treatment.

In recovering tars and pitches the process is as follows: The bisulphite liquors which come from the digesters and which have a concentration of 5 degrees are first treated with a small amount of lime or soda with the idea of converting the bisulphite into the sulphite condition. When this operation has been performed, the liquor is evaporated up to the point that the product remaining does not contain any more than ten per cent of water. After this has been accomplished, the residual mass is placed in an iron receptacle which is heated externally by means of a steam jacket. At the same time gas tar in the proportion of two to ten per cent of the mass is introduced into the latter and the substances are mixed together thoroughly, while the heating is continued in order to evaporate all the water that is contained in it. The operation is then terminated and the product is allowed to run into barrels where it solidifies.

When sulphur and resins are recovered from the sulphite cellulose waste liquors, the operation of the process is as follows. The recovery of the sulphur which is set free in the liquor due to the decomposition of the bisulphite may be

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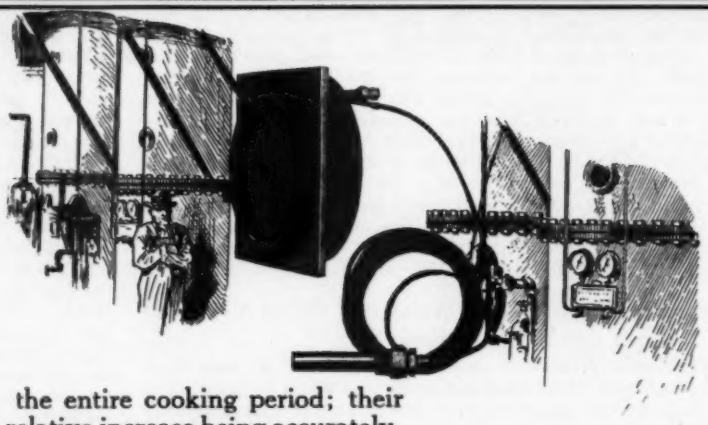

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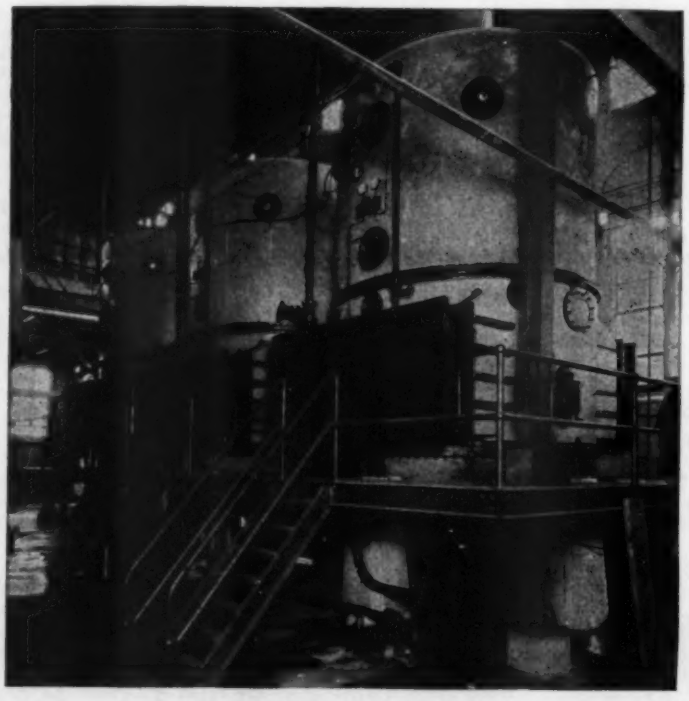

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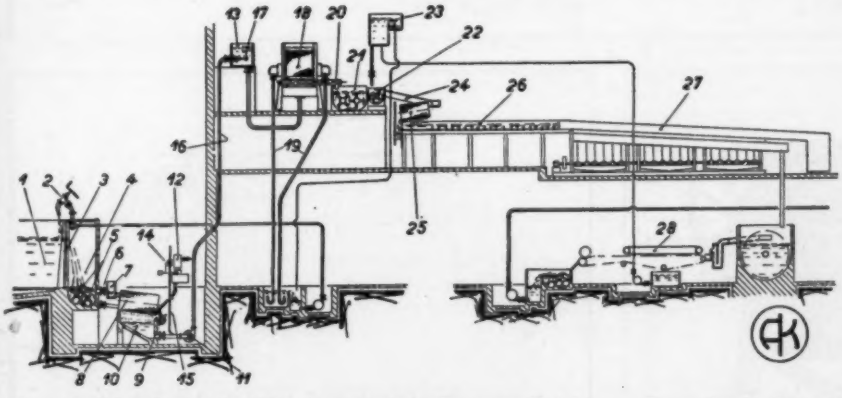
carried out with a recovery efficiency of fifty per cent. The liquor which is to be treated is placed in a closed vessel and a current of sulphuretted hydrogen gas is made to pass through this liquor, this being effected by means of a pump or a suitable compressor. This gas unites with the oxygen of sulphur dioxide to form water and if the operation is carried out at a low temperature a precipitate of sulphur is obtained, which contains both the sulphur set free from the hydrogen sulphide as well as that obtained from the decomposition of the sulphur dioxide.

New Process of Feeding Stock

THE new process of feeding stock in a regular manner both from the standpoint of quantity and consistency to the paper stock preparing and fine screening installation is shown in graphical form in the accompanying illustration. The half stuff which is placed in the stuff chest (1) is loosened up by means of a current of back water fed through the spray nozzle (2). The mixture of water and stock then flows over the screen (3) which is made of individual boards into the box (4) in which a rapidly running agitator shaft (5) is turning. This mixes the stock with the water in as intimate a manner as possible and thus prepares it for the further processing.

The flow of mixture from the box (4) can be regulated and this flow (6) runs into a longitudinal trough (7), which carries the stock to the drum (8) which separates the branches and like. The separated branches, knots and the like fall out of the end of the drum (8) into a conveyor (9), while the purified half stuff falls into a pit (10). The stock pump (11) carries the half stuff with 1.7 to five per cent stock density over a stock consistency regulator (12) and then to the stock level regulating box (13).

The consistency regulator (12) maintains the consistency of the stock at a constant point, which means that a definite quantity of dilution water is continuously added to the stock which is sucked in by the pump (11), this water flowing



through the valve (14) which is automatically controlled by the regulator, and the pipe (15). This quantity of water is automatically increased or diminished in accordance with the variation in the consistency of the stock.

The direct connection of the water pipe (15) with the suction pipe of the pump (11) ensures an intimate mixing of the stock and the water of dilution and a short interval between the pump (11) and the consistency regulator (12).

The quantity of stock which is carried through the pipe (16) to the stock level regulating box (13) possesses, therefore, a constant consistency.

The float valve (17) maintains a constant level of stock in the box (13), so that the pulp thickener (18) receives a current of stock which is constant both in quantity and in consistency. The concentrating machine or pulp thickener which is provided with the suction pipe (19) and which is under a vacuum gives as well a concentrated half stuff which has almost a constant content of dry fiber and this half stock is fed on to the conveyor (20) and then reaches the drying separator (21).

The current of paper stock then enters the so-called wet separator (22), to which a constant quantity of back water flows from the regulating box (23), with the result that the stock is strongly and uniformly diluted. The current of stock which remains constant as far as quantity and consistency are concerned then flows through the trough (24) of the separatory drum (25), through the sand catcher (26) and over the fine screen (27) into the thickener (28). Der Papierfabrikant, 1927, pages 326-7.

Control and New Norwegian Grinding and Screening Methods

CONTROL in grinding means not only testing of the freeness of the pulp but infers control of the entire grinding process for the establishment of conditions under which the grinding can be carried out to best advantage. In preparing the wood for the grinding operation it is necessary to cut the wood as smoothly as possible and the wood must be properly handled in the barking drum.

In most old grinding mills the stock is raised by means of a conveyor to the highest located refining engine and the refined stock is then allowed to pass through the knot catcher. Water is added only to the grinder and in the run-off trough from the refining engine to the knot catcher. Thorough investigations have shown that this system works very unfavorably. By constant determination of the degree of dilution after the grinder, before and after the screens, it has been found that approximately fifty per cent of the total mass passes constantly through the refining engines of which only ten per cent is refined stock and forty per cent is kept in constant circulation. This unnecessary work is sufficient to operate the board machines themselves.

Just as soon as the degree of dilution before the board machines is changed by additional refining or the addition of more water in the run-off trough, the board machine produces considerable waste and the stock becomes brittle. The grindermen say that without sufficient refined stock the pulp does not attain its proper quality. The actual truth of the matter is that the board machines require a considerably more dilute stock than the screens. Inasmuch as, however, all dilution takes place in the system before screening, hence the board machine determines the amount of water before the screen drums, while the quantity of refined stock is determinative for the dilution. Furthermore the refined stock which is in circulation effects a fine screening, due to the fact that it forms a film of fibers on the screens. This, therefore, explains the fact that from the standpoint of the addition of water in this unregulated system it is impossible to operate without considerable refined stock.

By a simple change of the system (dilution and screening), without the addition of new machines, it is possible to increase the production by ten to twenty-five per cent in many grinding mills and also to obtain the same or better quality of mechanical wood pulp. Furthermore, constant control of the degree of grinding and of the strength of the mechanical wood pulp are also effected in many mills. This indicates the great influence of the sharpness of the stone on the quality of the stock. While the testing of the pulp for freeness is very important, nevertheless it is not sufficient. Thus tests have shown that the content of dead-ground fibers is not always indicated in the degree of beating or grinding. Only research will be able to clear up this matter further. Papir Journalen, 1926.

Wooden Calender Rolls

THE rolls that are used in the paper calenders and the like are generally made by turning off a wooden log to the correct diameter on a lathe, then cutting it into the correct length and attaching metallic endpieces to the ends in order to be able to attach the roll to its shaft. Rollers of this sort made all in one piece, however, soon show signs of wear and tear, and these rough spots are manifested in corresponding

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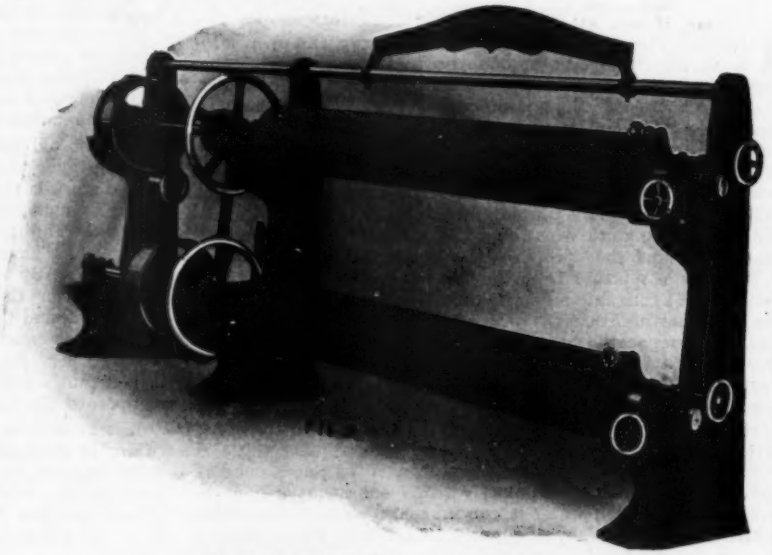
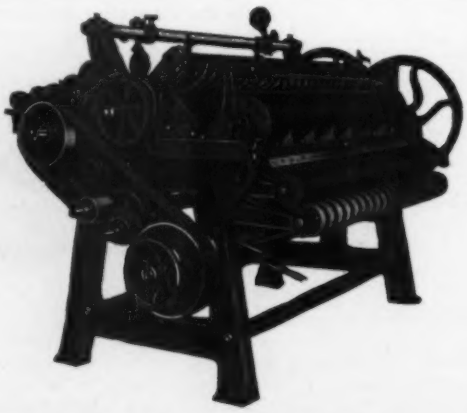


TWO DRUM REEL—Heavy Pattern



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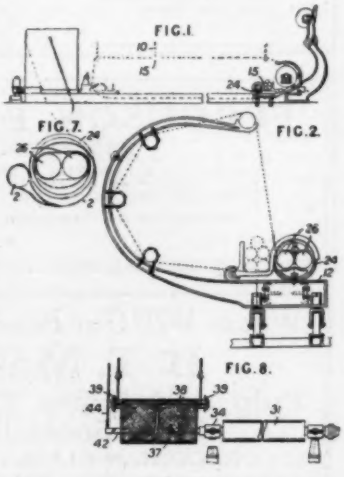
faults in the paper that is run between the rollers. For it has been found that the longitudinal fibers of wood are softer at certain points than at others. Hence these rollers must be removed from the calender and must again be turned down. Furthermore, it is also found that the roll which is made all in one piece is quickly distorted or warped when it is partially or entirely impregnated with liquids.

The method of making these rollers which is described in German Patent No. 438,828, is for the purpose of counteracting these difficulties in producing a roll which does not swell or warp, and which shows only slight traces of wear and tear, if any at all, after long, uninterrupted use, and which also renders it possible to utilize small pieces of wood which would otherwise be allowed to go to waste.

The new calender rollers, which consist of discs built from wooden sectors and interspersed with metallic discs, whereby the wooden fibers run radially to the axis of the roll, is also characterized by the fact that the aforementioned metallic discs are provided with a ring-shaped flange, which is fixed in a groove that is cut into the sectors. This affords the possibility of fastening the metallic discs to a special collar which is itself fastened to the shaft. The roller can be made in any desirable diameter and in any desirable length, as both dimensions may be increased or decreased by the addition or removal of discs and wooden segments.

Improvements in Fourdrinier Machines

IN FOURDRINIER paper making machines provided with means for withdrawing the frame laterally for applying a new wire, means are provided for lifting the couch roll clear of its bearing at one end, and, by the use of a carriage (12) Figure 2, in which the new wire is supported, the wire is looped around the couch roll and then run along the underframe of the machine to the breast roll end, the wire being then opened out and supported as shown in Figure 1, by light poles (15) suspended by hangers (10) for the frame to be run back into position.



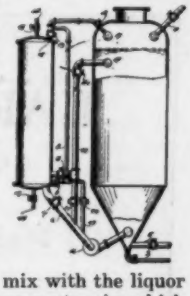
The wire is folded around the poles (2) and (26), Figures 7, mounted in reel holders (24) by which it is run along the frame to open out the wire. The front couch roll bearing may be supported on a removable block, and the raising of the couch roll may be effected, as shown in Figure 8, by means of a pipe or rod (42) coupled to the front bearing (34) of the couch roll (31) and lifted by a hoist (44) with the wire (37) in the position shown, when the wire may be run into position under the couch roll, the wire which has been folded on poles (38) being then run along the underframe into position by reel rollers (39). British Patent No. 265,524.

Progress in Bleaching Pulp

WHEN the density of the pulp-water mixture is increased from approximately seven per cent to eighteen to twenty per cent, then under best conditions the saving in chlorine amounts to ten to twelve per cent, and in no cases, as has been reported, to as much as thirty to forty per cent. Two curves are shown in the article which afford some information on the consumption of steam and of energy per ton of the air-dried pulp, factors which are very difficult to establish and which vary considerably in accordance with the density of the stock. As the cubic contents of the trough of the bleaching beater increases, the vaporizing surface diminishes considerably, very much to the disadvantage of the bleaching operation. The mechanical injury done to the paper fibers by high concentration of bleach liquor must not be neglected. The I. G. F. arbenindustrie A. G. has recently obtained a patent on a continuous bleaching process, in which any injury to the fibers is avoided and which reduces the time spent in the bleaching process to a few minutes. The same firm has also patented another process which is based on a discovery made by Wenzyl to the effect that certain chemical reagents cause acceleration of bleaching and that for this reason only one-third to one-fifth of the ordinary time consumed in the operation is required to effect the same bleaching result in the new process. Wochenblatt fuer Papierfabrikation, volume 57, pages 955 to 960.

Making Pulp from Fibrous Material

THE process of making pulp from fibrous materials, which is described in United States Patent No. 1,632,467, consists in removing the air from the fibrous material in order to reduce the pressure in it below that of the atmosphere. Then this fibrous material is digested in digestion liquor which is heated up to a high temperature. The liquor is also under pressure and a space is left above the level of the liquor in the digester. The pressure is suddenly relieved in that space and in the liquor and the fluid is then directed to flow as a result of this pressure reduction into a closed tank. The temperature of the fluid in the tank is raised and thereafter the fluid is reintroduced from the tank into the digesting liquor so as to mix with the liquor for further use in the same cook. The apparatus in which this process is carried out is shown in the accompanying illustration.

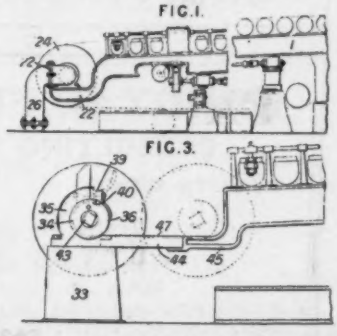


Coated Paper Board

PAPER board composed of consolidated layers of paper material includes an outer calendered liner which has a finished coated surface, the fabric structure of the board being of a substantially uniform set and retaining substantially the maximum rigidity inherent in the material of which the board is composed. The board possesses a pronounced stiffness and snappy characteristic, the fabric structure being characterized by its manufacture from the wet stock to the finished coated product without rolling up or lapping the board upon itself or subjecting it to severe flexing under tension. United States Patent No. 1,624,091.

Improvement in Paper Machines

IN FOURDRINIER paper machines wherein the table structure is removable for changing the wire cloth, the couch roll (24) is mounted on an extension (22), see Figure 1, of the table (1) and is movable therewith. The suction pipe has a removable section (26) to facilitate dismantling prior to moving the table structure. In a modified construction the couch roll is mounted in separate pedestals (33); see Figure 3, and for changing the wire, a removable bridge beam (44) is inserted and the couch roll is run over the beam on to the extension (45) of the table. A rack (47) is provided on the beam for this purpose and gear wheels (36) engage therewith, the roll being turned by a handle on a stub shaft (43). The couch roll bearings (34) are mounted in brackets (35) having removable lug members (39) which are provided with teeth (4) for engaging between two adjacent teeth (36). In another arrangement, extensions of the table may have pockets into which the couch roll may be lifted from its separate pedestal bearings. British Patent No. 268,180.



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New York, July 1, 1927.

INDICATIONS are that the paper industry is settling down for the summer season and the customary quieting of business which the hot weather months bring with them. There has been no important change in the market condition recently. It doubtless is true that demand for paper in some quarters has slackened, yet it appears just as true that some branches of the industry are experiencing fairly broad activity and that the movement of certain classes of paper is of as large tonnage as ever has been known at this period of the year.

The feeling prevails in the trade that the usual slowing down of business in the summer is not likely to be witnessed to as pronounced a degree this year as heretofore. It is pointed out that buying by nearly all paper consumers for some time past has been strictly of hand-to-mouth fashion, and that as a result stocks in the hands of consumers are much smaller than they ordinarily carried in the past and in many instances are virtually nil. Therefore it is believed demand will keep up fairly actively during the next few months, in which event the industry will experience better business than it usually does in summer.

Statistics seem to prove there is a good movement of paper of practically all kinds. In fact, they show that in the aggregate more paper and board is being produced and marketed than ever before, excepting possibly in some abnormal period, yet in spite of this seemingly favorable position, there are few manufacturers or merchants satisfied with the market condition. The answer is that profits are slim. With the paper mills of the country equipped to produce substantially more product than the country can absorb, there is obviously keen competition for business, and this keen competition which has existed for a considerable period has served to beat down prices until there is little margin between manufacturing costs and market value, so that while the industry is favored with large output the remuneration to producers is not what it should be.

The production of paper and board in the United States in April showed a decline equivalent to about 6 per cent as compared with the preceding month, according to the monthly statistical summary compiled and issued by the American Paper and Pulp Association. Production in March had recorded a gain of some 13 per cent over the February output. During March mills of the country produced a total of 558,412 net tons of paper and board, against 596,448 tons in March, 525,896 tons in February, and 515,603 tons in January. Mill stocks declined slightly during April, amounting to 244,969 tons of all grades at the end of that month, contrasted with 246,783 tons at the end of March. Shipments from mills in April aggregated 556,503 tons, compared with 587,096 tons in the preceding month.

Production of newsprint in the United States and Canada recorded a gain in May as compared with the preceding month, according to the monthly statistical summary of the News Print Service Bureau. During May production in the United States reached 127,395 tons and shipments from mills were 126,984 tons, while production in Canada was 171,819 tons and shipments 170,468 tons, making a total U. S. and Canada production of 299,214 tons and total shipments of 297,452 tons, compared with 296,696 tons produced and 297,521 tons shipped in April. During May, 15,828 tons of newsprint were made in Newfoundland and 1,586 tons in Mexico, so that the total North American output for that month was 316,628 tons.

During the first five months of 1927 the Canadian mills produced 826,083 tons of newsprint, against 735,152 tons in the corresponding period last year, while the U. S. mills made 646,874 tons, against 701,850 tons in the first five months of 1926. The Canadian mills produced 90,921 tons more in the first five months of this year than last year, which was an increase of 12 per cent. The United States output was 54,983 tons, or 8 per cent, less than in the first five months of 1926, that in Newfoundland was 32,742 tons or 48 per cent more, and in Mexico 1,285 tons or 25 per cent more, making a total North American increase of 69,982 tons or 5 per cent. During May the Canadian mills operated at 86.7 per cent of rated capacity, and the U. S. mills at 83.8 per cent. Stocks of newsprint at Canadian mills totaled 27,520 tons at the end of May and at U. S. mills 24,233 tons, making a combined total of 51,763 tons, which was equivalent to 3.9 days' average production.

The April production index number for paper was 114, compared with 117 for March and 127 for April last year, taking 1919 at 100 per cent, according to the U. S. Department of Commerce.

There was quite a spurt in the consumption of newsprint in June. The public interest in the transatlantic flights and in the home-coming receptions to Col. Charles A. Lindbergh resulted in a sudden big increase in newspaper circulation, and it has been estimated that newsprint consumption mounted 25,000 tons in a period of a few weeks over and above the amount normally used by publishers. Meantime signs have developed of a sagging in newsprint consumption, as is customary at this time of the year. The market tone is steady; no changes have been recorded in mill quotations, and it appears unlikely any will be made over the balance of this year.

Wrapping paper is in good demand and apparently is in a good statistical market position as most mills are well sold ahead and as considerable production in the South was lost during the Mississippi flood period. Prices are well maintained. Tissue is in fair demand, and steady quotably. Book paper is moving freely on contracts and there is a fair spot demand but mills are looking for additional orders and few manufacturers are producing at anything touching full capacity. Fine paper demand is more or less stationary and is developing steadily. There is, however, not enough business to keep mills very busily engaged.

Box boards are moving in a routine manner and volume, and quotations are maintained. Board mills as a group are operating only about four days a week and could readily accommodate a considerable more volume of orders. Consumers are buying to cover direct requirements principally. Wall board is in fair demand and steady in price.

Cedar Rapids Paper Box Company Expands

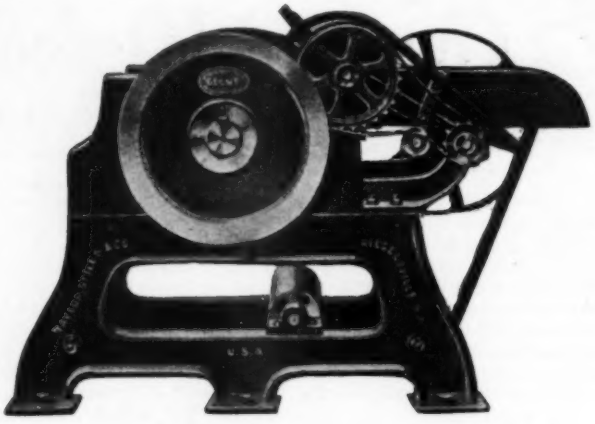
The Cedar Rapids Paper Box Co., 1113 S. Sixth St., Cedar Rapids, Ia., is installing $15,000 worth of machinery at its plant for the production of corrugated paper boxes. R. L. Savage, manager of the plant, estimates that between 40,000 and 60,000 boxes will be manufactured daily.

Heretofore it has manufactured only paper folding cartons, but the new box will be heavy enough for shipping purposes. A new warehouse, 70x30 feet is contemplated to adjoin the factory.

Keokuk Envelope Company

C. R. Rasmussen, of Minneapolis, Minn., is organizing the Keokuk Envelope Co., which will begin operations shortly. They plan to devote the first year to contract work, and hope to expand then to specialty work, including flat, expanding and filing envelopes.

George J. Wickstrom will be factory superintendent in the plant, with Ralph C. Arms, as cost accountant. Modern machinery will be installed and a plant of about 3,000 sq. ft. occupied.



RAG CUTTERS

Whatever You Cut, a GIANT Will Solve Your Problem

LET US FIGURE IT OUT FOR YOU

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58% Soda Ash — 76% Caustic Soda
Modified Soda — Special Alkalies
Bicarbonate of Soda

CONVENIENT WAREHOUSE STOCKS IN YOUR VICINITY

DIAMOND ALKALI COMPANY

PITTSBURGH ALKALI PENNSYLVANIA

Papermaking Rags

After displaying increasing firmness and an upward tendency in prices, the market for papermaking rags has reverted to an easy situation, and conditions obtaining at present seem altogether in favor of those on the buying side. Just what caused the turning-around of the market is hard to say, unless it was the withdrawal of buyers who for a while manifested considerable interest and who were purchasing on a fairly broad scale. There are several bullish factors at present in view but they seemingly are having little influence in supporting prices other than of a sentimental character. Paper manufacturers appear to be securing all the rags desired, and at almost any price they care to offer so long as they bid figures within reasonable bounds.

The softening of the market tone had its start, so it appeared, in the lowest quality of rags or roofing stock. Felt mills with scarcely an exception retired from the market as buyers a few days ago, and since then prices of roofing rags have adopted an easy undertone and have shown at least a slight decline, and other classes of rags seem to have been affected by the downtrend in roofing stock. It is not unusual for the market to exhibit a weakening tendency during the spring and early summer as it is at such time collections are supposed to be largest, although dealers contend that the old seasonal theory in papermaking rags no longer obtains and that as a matter of fact incoming supplies from collection sources recently have been smaller than customary, reflecting the comparatively low market prices prevailing and the resultant refusal of collectors to exert as much effort to gather stock as usual.

The situation abroad in rags is reported a little less strong than it was, and it may be that this contributed to the easing of the market here. For a time importers in the United States encountered a good deal of difficulty buying in most European countries owing to the higher level of prices ruling there than here, but it is understood the price levels on the other side of the Atlantic are a bit lower than formerly while shippers in Europe manifest more desire to effect sales to America and therefore are not so independent as regards prices as they were. There are instances, however, where prices obtaining in Europe are well above our market levels, and in such cases importers say they find they are unable to buy abroad at low enough costs to compete in the domestic market.

Roofing stock is quoted at around 1.75 cents a pound for No. 1 packing or cloth strippings f. o. b. New York, and 1.45 cents for No. 2 domestic stock. Foreign dark colored cottons are selling at 1.60 to 1.65 cents a pound ex dock New York, and foreign linsey garments at 1.75 to 1.80 cents. Old white rags are moving slowly, and prices are rather uncertain, depending in large measure on the quality of packing and the anxiety of dealers to make sales. No. 1 repacked whites are selling out of New York at 6 to 6.50 cents a pound f. o. b. that city but country-packing is fetching well above this price level, while No. 2 repacked whites are quoted at around 3 cents per pound f. o. b. New York. Repacked thirds and blues are reported available at 2.25 cents a pound and less at shipping points, and miscellaneous blues at 1.75 cents. Cotton batting has stiffened in price, reflecting the rise in raw cotton, and dealers generally ask 2.75 cents a pound or thereabouts at points of shipment.

New cuttings of most grades have moved off a little in price. Dealers state that fresh supplies are coming in from producing sources in unusually small amounts, yet paper mill demand has been correspondingly small and the evident anxiety of some sellers to move stocks has created price easiness. No. 1 white-shirt cuttings are quoted at 12.25 cents a pound f. o. b. New York, fancy shirt cuttings at 6 cents, washables at 4.75 cents, and light silesias at 7.25 cents, while sales of blue overall cuttings have been recorded at 7 cents at shipping points and of bleached canton flannels at 8.50 cents. Fine paper manufacturers are buying cuttings in a spotty manner, almost solely against actual and immediate requirements.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.25
White shirt cuttings, No. 2	7.50- 8.00
Fancy shirt cuttings	5.75- 6.00
Washables, No. 1	4.50- 4.75
Unbleached muslin	9.50- 9.75
White lawns	8.50- 8.75
Overall cuttings, blue	6.75- 7.00
Black silesias	5.00- 5.25
Light flannelettes	8.25- 8.50
Canton flannels, bleached	8.25- 8.50
Canton flannels, unbleached	7.50- 7.75
Shoe cuttings, bleached	8.25- 8.50
Shoe cuttings, unbleached	6.75- 7.00
Light silesias	7.00- 7.25
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	4.75- 5.00
Corduroy cuttings	3.00- 3.25
Cottonade cuttings	3.75- 4.00
Linens, No. 1 white, foreign	12.50-13.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	2.75- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.65- 1.85
Thirds and blues, repacked	2.00- 2.30
Black stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	2.75- 3.00
Roofing, No. 1 (cloth strippings)	1.70- 1.80
Roofing No. 2	1.40- 1.45
Linsey, garments, foreign	1.75- 1.80
Dark colored cottons, foreign	1.60- 1.65
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	7.50- 8.00
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

There is a fair demand from paper mills for old rope. At any rate, dealers handling this article say they are readily disposing of about all the supply of strictly No. 1 domestic old rope that is reaching them from production and collection sources, though it is stated available supplies are well below normal and that as a matter of fact less business—from the point of view of volume—is passing in rope than ordinarily is the case. Prices are more or less stationary and seem charcterized by a fairly steady tone. Sales of No. 1 domestic old manila have been noted at 4.25 to 4.50 cents per pound f. o. b. shipping points, and of foreign No. 1 manila rope at 3.50 to 3.75 cents ex dock New York. Strings are in routine call only and are quoted at 95 cents to $1.15 per hundred pounds, depending on the packing.

Bagging is in a quiet market position. Few paper mills are buying other than in a hand-to-mouth way and there appears to be ample supply on hand to fill their wants. Prices have changed but slightly but any alterations recorded have

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Liquid Chlorine

Single Unit Tank Cars Multi-Unit Tank Cars
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Commercial Sulphate of Alumina
Standard Bleaching Powder

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GOOD RAGS FOR PAPER MILLS NEW CUTTINGS

The Leshner Paper Stock Co.

INCORPORATED

Hamilton, Ohio

Branch—Cleveland, Ohio

been in a downward direction. No. 1 scrap bagging is selling to mills at 1.60 to 1.75 cents a pound f. o. b. dealers' points, and roofing bagging at 1.35 cents per pound. Gunny is quiet and tending lower in value.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.75-2.00
Gunny, No. 1 foreign	1.75-1.90
Scrap bagging, No. 1	1.60-1.80
Roofing bagging	1.30-1.35
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.25-4.50
Sisal strings	1.75-2.00
Mixed strings	.95-1.15

Old Paper

In describing the prevailing market condition obtaining in old paper, it could be stated accurately that two almost distinct levels of prices exist for this commodity at present. Dealers in various parts of the country who have a working arrangement with consuming mills and who regularly supply certain board and paper manufacturers with waste paper are securing prices well beyond those ruling in the open market, which means in other words that consumers are granting much more attractive prices for the quality of packing desired and to dealers who make a practice of shipping to particular mills.

In New York City the situation seems just as unsatisfactory as has been the case for some time. Prices of New York packing are on levels where dealers there assert they cannot meet their costs in collecting, sorting, packing and shipping material, and it is quite evident production in the metropolis of the country has been reduced to a low point because many people have forsaken the old paper business in that city for more remunerative employment. Mixed paper of No. 1 quality, for instance, is selling out of New York at 35 cents per hundred pounds f. o. b. that city, whereas in other parts of the country mills are paying as much as 60 cents for mixed paper at points of shipment. Folded news is quoted in New York at 45 cents a hundred pounds, and in the Middle West this grade of stock is bringing 65 cents f. o. b. dealers' points.

Shavings are quoted around 3 cents a pound f. o. b. shipping points for No. 1 hard white, and 2.75 cents for soft white shavings. Heavy books are selling at 1.20 to 1.30 cents a pound, old No. 1 kraft paper at 1.90 to 2.10 cents, and white blank news at 1.50 to 1.60 cents.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.85-3.10
Hard white shavings, No. 2	2.60-2.80
Soft white shavings	2.60-2.80
Colored shavings	1.00-1.25
Heavy book, No. 1	1.20-1.30
Crumpled book, No. 1	.85- .95
Ledger stock	1.40-1.65
Kraft, No. 1	1.90-2.10
New kraft cuttings	2.50-2.75
Manilas, No. 1	.65- .80
White blank news	1.50-1.60
Overissue news, No. 1	.55- .75
Folded news	.45- .65
Sulphite mill wrappings	.65- .75
Old corrugated boxes	.60- .70
New corrugated box cuttings	.75- .85
Mixed paper, No. 1	.35- .60
Common paper	.25- .40

Pulpwood

Demand for pulpwood is somewhat slow at present, according to reports. There is a steady movement of supplies on contract but transient buying is on a small scale, which is taken to reflect the dull market prevailing for ground wood and the fairly quiet position of chemical wood pulp. Prices

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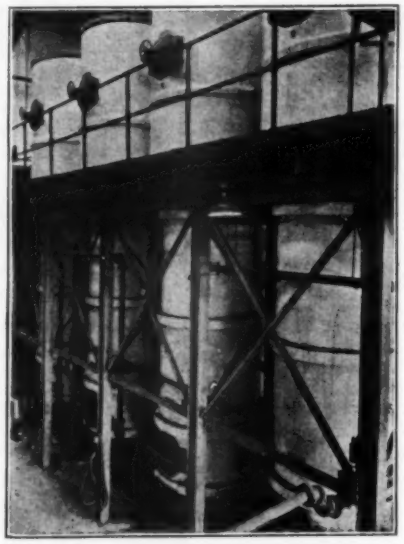

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SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

SOUTHWARK HYDRAULIC PRESSES

for Pulp, Sulphite, Baling, Etc.

HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
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400 Washington Ave.
PHILADELPHIA, PA.

CHICAGO
343 S. Dearborn St.

of pulpwood are maintained quotably though, as would be expected under ruling circumstances, the undertone is none too firm.

Exports of pulpwood from Canada during the first five months of the current year amounted to 678,693 cords, valued at $6,341,457, compared with 497,318 cords of a value of $4,564,553 exported in the same time of last year.

Mechanical Pulp

There is very limited activity in the mechanical pulp market. It might be stated that not in a long time has the situation been quite as dull as at present; few consumers show much interest and fewer still are actually engaging in buying in the open market, the reason for the quietness being that water conditions this spring have been exceptionally favorable with the result grinders have been able to produce all the supply required without resorting to open-market purchases. Manufacturers who produce pulp for sale and dealers who market it are frank to say they do not look for any appreciable market improvement until some of the stocks on hand are used up or until water conditions are less favorable to as large an output as has been recorded in recent months.

The market is so dull that in certain instances grinders who make ground wood for sale to transient buyers have shut down their plants, having found it altogether unprofitable to produce and market pulp at the prices now obtainable. Canadian ground wood is offered at $25 and $26 a ton f. o. b. pulp mills in the Dominion, and doubtless sales have been made at cheaper prices. Domestic ground wood is quoted around $28 a ton f. o. b. shipping points, while imported ground wood of Scandinavian origin is available at $32 a ton ex dock New York for dry pulp.

Mills in the United States produced a total of 107,692 net tons of mechanical pulp in April, contrasted with 108,692 tons in the preceding month, and had stocks aggregating 143,998 tons at the end of April, against 128,920 tons at the end of March, according to the American Paper and Pulp Association.

Chemical Pulp

Despite the relatively lower prices prevailing on imported pulps, domestic manufacturers are maintaining their quotations on wood pulp fairly well. This is true as regards some grades although there are other grades which have been affected in price by the downtrend in foreign pulps. Leading producers of bleached sulphite are holding to the same prices they have quoted for some time and it is understood they do not intend to make any changes. On the other hand, unbleached sulphite has sagged in value along with the imported product.

The market is at best quiet. The contract movement of supplies continues in moderately good volume and there are occasional sales of important tonnage reported in the spot market, but generally buyers are keeping much under cover at present and seem bent on doing nothing else than satisfying urgent needs. Bleached sulphite is quoted at 4 to 4.75 cents per pound f. o. b. pulp mills. No. 1 unbleached sulphite of newsprint grade is available at about 2.65 cents a pound f. o. b. producing plants, and of book quality at around 3 cents. Bleached soda pulp has been bought at 3.50 cents a pound at pulp mills and it is said that some transactions have been noted down to 3.25 cents. Kraft pulp of No. 1 grade is quoted at 2.75 to 3 cents a pound.

Production of chemical pulp in the United States declined in April as compared with the preceding month, totaling 107,620 net tons of all grades of chemical, against 119,849 tons in March, according to the monthly report of the American Paper and Pulp Association. Mill stocks at the end of April were 19,827 tons, contrasted with 21,517 tons a month previous.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.10-3.30
Unbleached sulphite, No. 1 strong (news grade)	2.65-2.90
Unbleached sulphite, No. 1 book	2.85-3.15
Soda pulp, bleached	3.25-3.50
Mitscherlich, unbleached	3.00-3.25

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Caustic Soda

Bicarbonate of Soda

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Advance Bag & Paper Co. 7s, 1943	@105
American Sales Book Company 6s, 1939	@101
American Writing Paper Co. 6s	@ow
British Columbia Pulp & Paper Co. Pfd.	@ 65
Champion Paper Co. 6s, 1945	@ 95
Donnacona Paper Co. 6s, 1940	@101
Escanaba Paper Co. 6s, 1939	@ 94
Eastern Manufacturing Co. 7s, 1938	@ 89
Great Northern Paper Company	@ 63
Mead Pulp & Paper Company 5s	@ 92
Oxford Paper Co. Common	@170
Stevens & Thompson Paper Co. 6s, 1942	@ 93
St. Croix Paper Co. 5s, 1927	@ 99½
St. Regis Paper Co. 6s	@ 99½
Ticonderoga Pulp & Paper Co. 6s, 1940	@ 99¾
Tait Paper & Color Industries 6s, 1934	@ 89

WE WILL SELL

Bayless Pulp & Paper Co. Common	@ 25
Champion Paper Co. 6s, 1945	@ 97
Stevens & Thompson Paper Co. 6s, 1942	@ 95
St. Regis Paper Company 6s	@100½

H. D. KNOX & CO.

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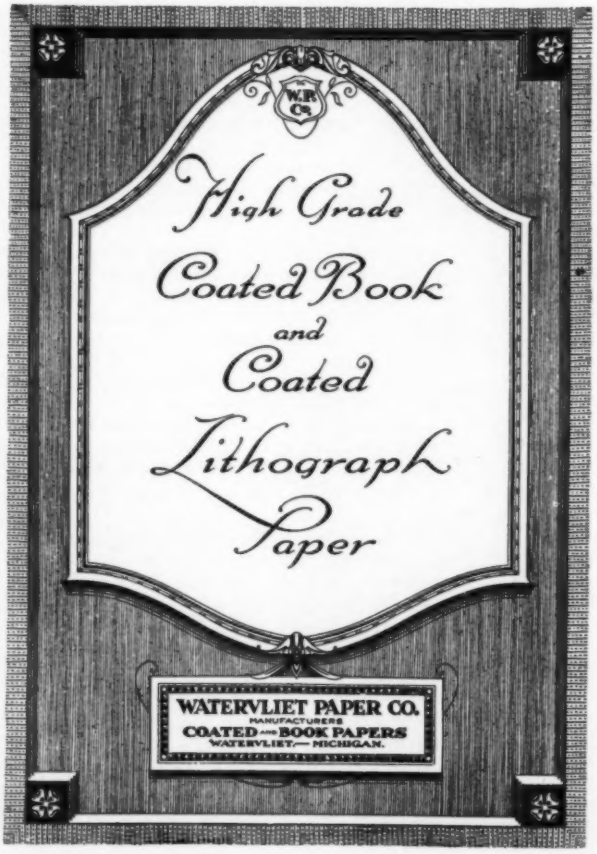
Inquiries invited on all Paper Pulp Lumber Securities



New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.40- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.25-15.00
Newsprint—	
Rolls, contract	3.25-.....
Rolls, transient	3.50-.....
Sheets	3.65- 3.80
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	5.25- 5.50
Southern kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemical Pulp

(*Continued from page 707*)

Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

Reports tell of a steady movement of bleaching powder into consuming channels and prices are quoted firmly at 2 to 2.40 cents a pound f. o. b. works, according to quantity and shipment. The demand for caustic soda is fair and quotations are maintained at 3 to 3.10 cents a pound in large drums at shipping points, and soda ash is enjoying a fairly active market and is steady in price at 1.32½ cents per pound for shipments in bags. Casein prices have eased slightly to where it is reported purchases of domestic are possible at 17.75 cents a pound and imported at 18 cents. Brimstone is steady quotably at $18 to $19 a ton at mines.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	4.00 - 4.25
Bleaching powder	2.00 - 2.40
Brimstone (long ton, at mine)	18.00 -19.00
Casein (duty paid)	17.75 -19.00
Caustic soda, spot delivery	3.00 - 3.10
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, grade E	10.10 -10.15
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½-.....
Starch, papermakers', in bags	3.07 -.....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities when we will endeavor to furnish actual markets.

BONDS	BID	ASKED
Abitibi Fibre Co. 6s, 1947	97	98½
Abitibi Power & Paper Co. 6s, 1940	104½	105¼
Advance Bag & Paper Co. 7s, 1945	105	106
A. P. W. Pulp & Power 7s, 1946	101	103
American Sales Book Co. 6s, 1939	101	
American Writing Paper Co. 6s, 1947	82	
Beaver Products Co. 1st 7½s, 1942	109	
Berkshire Hills Paper Co. 8s, 1941		70
British Columbia Pulp & Paper Co. 6s, 1950	89½	92
Belgo Canadian Paper Co. 6s, 1943	101	103
Bryant Paper Co. 6s, 1942	101	103
Cady Lumber Co. 6½s, 1939	88	93
Canada Paper Co. 6s, 1938	99¼	100½
Canadian Paper Board Co. 7s, 1937	98½	100
Cape Breton Pulp & Paper 6s, 1932	101	103
Central Paper Co. 7s, 1933	82	85
Celotex Co. 6s, 1929	101½	105
Celotex Co. 6s, 1936		97
Champion Fibre Co. 6s, 1941	98	100
Champion Paper Co. 6s, 1935	95	97
Champion Coated Paper Co. 6s, Serial	101	
Continental Paper Products 6½s, 1943	87	
Cornell Wood Products 7½s, 1937	101	104
Crown Willamette Paper 6s, 1951	98	
Bells Paper & Pulp Co. 6s, Serial	95	
Donnacona Paper Co. 6s, 1940	100½	
Eastern Manufacturing 7s, 1938	89¼	90½
Eddy Paper Co. 7½s, 1931	102	104
Escanaba Paper Co. 6s, 1939	94	
Filer Fibre Co. 7s	95	98
Fort Orange Paper Co. 7s, 1942	96	100
Fort William Paper Co. 6s, 1946	98¾	
Fox River Paper Co. 7s, 1931	100	
Fraser Co. 6s, 1950	98	98¾
Gair (Robt.) Co. 7s, 1937	104	106
Gilbert Paper Co. 6½s	90	
Hammermill Paper Co. 6s, 1939	100	103
Hoberg Paper & Fibre Co. 7s, 1937	94	96
Howard Smith Paper Co. 7s, 1941	104	104½
International Paper Co. 6s, 1941	98	98½
Itasca Paper Co. 6s	97	
Itasca Paper & Prairie River Power 5½s	96	
Kalamazoo Vegetable Parchment 6s, 1938	99	
Manitoba Paper Co. 6½s, Serial	98½	99½
Marinette & Menominee 7½s, 1936	101½	
Mead Pulp & Paper Co. 5s	92	96
Menasha Printing & Carton 6½s, 1939	100	
Mengel Co. 7s	103	
Minnesota & Ontario Paper 1st 6s, 1931	97	99
Minnesota & Ontario Paper 6% Notes, 1931	97	99
Minnesota & Ontario Paper 6s, 1950		99¼
Monroe Paper Products 7½s, 1932	97	
Munising Paper Co. 6s, Serial	97	100
Mekoosa Edwards 6s	96½	100
Ontario Pulp & Paper 6s, 1931	108½	110
Orona Pulp & Paper 6s, 1943	98	
Orona Pulp & Paper 5s, 1941		96
Oswego Falls 6s, 1941	99	102
Paepcke Paper Mills 7s, 1930	100	
Parker Young 6½s, 1944	97	99
Parson Pulp & Lumber 7s, 1928	97½	
Paterson Parchment Paper 6s, 1938	100½	101½
Penobscot Chemical Fibre 6s, 1942	99	
Poland Paper 7s, 1930	99	
Port Alfred Pulp & Paper 6½s, 1943	101½	102¾

(*Continued on page 719*)

The B Co.-Inc. QUALITY PULPS

HAFSLUND NORWAY

"HAFSLUND BEAR"
Bleached Sulphite

F:HAGA

"FORSHAGA"
Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL

"HURUM SPECIAL"
Extra Strong Kraft

KOOS BAC

"BAMBLE"
Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

BATHURST LUMBER COMPANY, LIMITED

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

PERKINS-GOODWIN CO.,

Established 1846

551 FIFTH AVENUE — NEW YORK

U. S. AGENTS

FOR

SPAULDING PULP & PAPER CO.,
NEWBERG—ORE.

NORTHWESTERN PULP & PAPER CO.
TACOMA—WASH.

EXPORTS

Exports of paper from the United States during April last showed a little decline in point of value as compared with the preceding month and also a loss contrasted with the similar month last year, according to official statistics compiled and issued by the United States Department of Commerce in Washington. Total exportations of paper of all classes in April reached a value of $2,361,841, against $2,549,897 in March of this year, and $2,544,596 in April last year.

Exports of newsprint slumped noticeably in April, amounting to 2,145,001 pounds of a value of $100,853, compared with 3,296,466 pounds of a value of $153,287 exported in the preceding month, and 4,778,161 pounds of a value of $228,505 shipped out of the country in April, 1926. The bulk of the newsprint exports in April last were to Cuba and the Philippine Islands, shipments to the former totaling 708,461 pounds and to the latter 709,986 pounds.

Exportations of book paper, not coated, from the United States in April last were 1,118,746 pounds, valued at $104,367, compared with 1,441,883 pounds of a value of $141,546 in the same month of 1926. Wrapping paper exports in April were 2,714,238 pounds, valued at $206,133, against 3,186,829 pounds of a value of $232,057 in the same month last year. Box board exports were valued at $122,323 in April, showing a gain over the shipments of a value of $101,983 in the same month a year ago, while exports of other paper and straw board in April were valued at $226,453, against $182,534 in April, 1926.

IMPORTS

Wood Pulp

Although reports as a general thing describe the market for imported wood pulp as quiet, there is one feature which seems pretty well determined and that is that the downward movement of prices has been checked, temporarily at any rate. Demand is developing slowly though it doubtless is a bit better than it was recently, and there appears to be an improved sentiment in the trade—both among consumers and importers, with the result buyers are operating in some instances with a little more freedom while sellers are exercising greater caution in making commitments.

It is contended freely by those on the selling side that bottom prices have been reached for some time to come. It is believed by many, in fact, that an upward reaction by the market is very nearly due. No one is bullish enough to predict any sharp advance in values but most importers declare they expect to see some stiffening of prices, and evidently are using their powers of persuasion on mill customers in an attempt to get the latter to cover a part of their forward requirements in pulp. Emphasis is put on the prevalence of pulp market prices on a lower level than have been known in a lengthy period, of the fairly well sold-up position of many producing mills in Scandinavia, of the insistence of the Scandinavians that they are unable to manufacture pulp at present market rates profitably, and of the probability that a buying movement will develop here before long which will of itself carry prices higher.

In the meantime paper and board manufacturers are proceeding carefully in purchasing foreign pulp. When requirements are to be filled, contracts are placed readily enough, and in a few instances consumers have bought aside from their known needs; otherwise demand has been and still is noticeably restricted. Prices unmistakably are characterized by a steadier tone and have shown little further change. Bleached sulphite of prime grade is quoted at around 3.75 cents a pound or on a full range of from about 3.65 to 4 cents ex dock New York or other American Atlantic ports, depending on quality. Strong prime unbleached sulphite is selling at 2.60 to 2.75 cents ex dock New York, and easy bleaching sulphite at 2.90 to 3 cents. Standard prime Swedish kraft is quoted at 2.70 cents ex dock. Prime dry ground wood is reported available at $32 per short ton on the dock at New York.

Imports of chemical pulp into the United States in April recorded an appreciable decline compared with the preceding month, and were smaller than in any month this year up to April, according to official statistics issued by the Department of Commerce in Washington. During April total importations of chemical pulp into this country were 73,763 long tons, valued at $4,913,185, contrasted with 86,731 tons of a value of $5,765,921 imported in March last, and 91,528 tons of a value of $6,158,990 in April last year. The April receipts brought the total for the first four months of 1927 up to 378,215 tons, giving a monthly average of 94,553 tons, against a monthly average of 95,415 tons in the corresponding period of 1926.

Ground wood imports in April amounted to 17,654 long tons, valued at $466,563; against 21,202 tons of a value of $638,302 imported in the preceding month, and 14,166 tons of a value of $450,990 in April a year ago. During the first four months of the current year the U. S. imported 66,625 tons of ground wood, contrasted with 79,075 tons in the similar time last year.

Current market quotations ex dock and receipts at the port of New York during June follow:

Bleached sulphite, No. 1	3.65- 4.00
Unbleached sulphite, strong No. 1	2.60- 2.85
Unbleached sulphite, No. 2	2.45- 2.60
Easy bleaching sulphite	2.90- 3.15
Mitscherlich unbleached, genuine	3.00- 3.25
Mitscherlich unbleached, ordinary	2.65- 2.85
Kraft, standard Swedish	2.70- 3.00
Ground wood, per ton (dry)	32.00-34.00

Scandinavian Pulp Agency, 3,820 bls. from Skutskar; M. Gottesman & Co., 2,250 bls. from Soraker; Johaneson, Wales & Sparre, 1,200 bls. from Ortviken and 600 Hernosand; Chemical National Bank, 2,100 bls. from Oslo, 750 Iggesund and 128 Hamburg; E. M. Sergeant Co., 1,248 bls. from Gothenburg and 160 Oslo; Price & Pierce, 375 bls. from Gothenburg; J. Anderson & Co., 750 bls. from Hamburg and 1,200 Hernosand; National City Bank, 125 bls. from Hamburg; W. Hartmann & Co., 125 bls. from Hamburg; E. J. Keller Co., 338 bls. from Hamburg; Becker & Co., 287 bls. straw pulp from Naples; Castle & Overton, 557 bls. from Rotterdam and 1,644 Bremen; Lagerloef Trading Co., 103 bls. from Kotka and 236 Bremen; Pagel, Horton & Co., 500 bls. from Gefle and 3,000 Hernosand; Bulkley, Dunton & Co., 2,500 bls. from Gefle, 125 Hamburg, 5,000 Soderhamn and 2,500 Iggesund; Parsons & Whittemore, 458 bls. from Gothenburg; Central National Bank, 2,562 bls. from Trieste; Daniel M. Hicks, Inc., 109 bls. from Antwerp; Order, 2,000 bls. from Greaker, 2,560 Bremen, 1,275 Kotka, 256 Borga, 128 Hamburg and 3,000 Hernosand.

Paper Stock

Importations of paper stock into the United States continue on a comparatively small scale. There were much less than normal amounts of rags imported through the port of New York in June, and receipts of old rope, bagging and miscel-

The Pulp and Paper Trading Co.

21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
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Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp
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Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
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LOCKPORT N.Y. U.S.A.
F.W. ROBERTS MFG. CO.
OF CANADA LTD.
NIAGARA FALLS ONT.
MANUFACTURERS OF
PAPER & PULP MILL SPECIALTIES

MITTS & MERRILL GRAVITY FEED SHREDDER

Reduces Paper Stock

Magazines, books, old paper and boxboard, frozen or dried pulp laps run through the Mitts & Merrill Gravity Feed Shredder are reduced to particles which hydrate readily when put into the beaters.

Built in six sizes with spouts ranging from 18" to 45" wide

Reduces Costs

Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1928 Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. SAGINAW, MICH.

laneous papermaking materials also were light, judging from the manifests of steamers reaching that port last month.

Imports of papermaking rags into the U. S. during the first four months of 1927, according to official figures issued by the Department of Commerce in Washington, amounted to 128,974,944 pounds, valued at $2,761,918, showing a marked decline from the 188,769,818 pounds of a value of $4,439,844 imported in the same time last year. Imports of waste bagging and waste paper in the similar period totaled 24,737,968 pounds, against 45,860,361 pounds in the corresponding time of 1926, and imports of old rope and miscellaneous paper stock were 18,466,460 pounds, compared with 27,249,802 pounds in the same period a year ago.

Imports of all kinds of paper stock other than wood pulp at New York in June, 1927, these data being taken from manifests of steamers reaching that port during the month, follow:

Old Rope

Brown Bros. & Co., 494 coils and 274 bls.; Chemical National Bank, 36 coils; International Purchasing Co., 94 lbs. and 124 coils; Ellerman's Wilson Line, 98 coils; New York Trust Co., 48 bls.; American Express Co., 586 coils; W. Schall & Co., 248 bls.; Daniel I. Murphy, Inc., 45 bls.; American Exchange Irving Trust Co., 49 coils and 8 bls.; E. J. Keller Co., 192 bls.; Order, 361 bls. and 199 coils.

Old Bagging

Warren Manufacturing Co., 62 bls.; British Bank of South America, 223 bls.; Chase National Bank, 67 bls.; New England Waste Co., 89 bls.; George M. Graves Co., 54 bls.; Bulkley, Dunton & Co., 133 bls.; Castle & Overton, 106 bls.; E. J. Keller Co., 348 bls.; New York Trust Co., 33 bls.; Order, 223 bls.

Rags

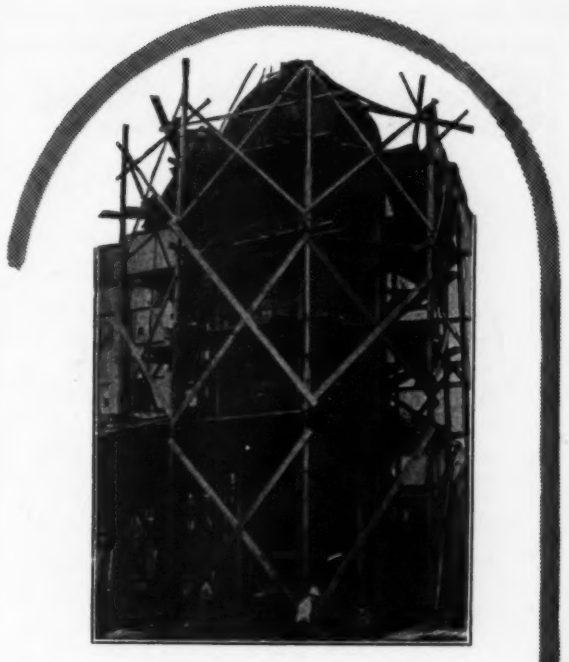
Castle & Overton, 481 bls.; C. H. Powell & Co., 14 bls.; E. Pullan, 24 bls.; Victor Galaup, Inc., 284 bls.; Katzenstein & Keene, 38 lbs.; General Fiber Co., 51 lbs.; Bulkley, Dunton & Co., 417 bls.; Daniel M. Hicks, Inc., 26 bls.; Salomon Bros. & Co., 24 bls.; Royal Mfg. Co., 106 bls.; Darmstadt, Scott & Courtney, 219 bls.; A. H. Searle, Inc., 195 bls.; S. Birkenstein & Sons, 74 bls.; E. A. Stone Co., 601 bls.; William Steck & Co., 70 bls.; Jaffe Products Co., 40 bls.; J. Cohen & Son, 53 bls.; Romeo Canovai & Figli, 131 bls.; J. Reiss & Co., 3 bls.; E. J. Keller Co., 1,635 bls.; Chemical National Bank, 109 bls.; British Bank of South America, 66 bls.; Banca Commercial Italiana Trust Co., 82 bls.; Bank of New York & Trust Co., 303 bls.; Chase National Bank, 1,054 bls.; American Exchange Irving Trust Co., Equitable Trust Co., 24 bls.; C. R. Spence & Co., 282 bls.; Goldman, Sachs & Co., 44 bls.; Lloyd Royal Belge, 6 bls.; American Express Co., 150 bls.; White Star Line, 95 bls.; Brown Bros. & Co., 18 bls.; Flintkote Co., 90 bls.; Ancram Paper Mills, 58 bls.; Order, 851 bls.

Miscellaneous Paper Stocks

Darmstadt, Scott & Company, 53 bls.; Milton Snedeker Corp., 249 bls.; Bulkley, Dunton & Co., 163 bls.; A. W. Fenton, Inc., 97 bls.; R. F. Downing & Co., 256 bls.; Equitable Trust Co., 304 bls.; Brown Bros. & Co., 114 bls.; Kidder Peabody Acceptance Corp., 61 bls.; Atterbury Bros., 140 bls.; Castle & Overton, 404 bls.; J. Cohen & Sons, 96 bls.; Bank of America, 475 bls.; C. R. Spence & Co., 108 bls.; State Bank, 33 bls.; George M. Graves Co., 23 bls.; American Exchange Irving Trust Co., 80 bls.; Crane & Co., 41 bls.; C. H. Dexter & Sons, 20 bls.; Harmon G. Lichtenstein, 369 bls.; Union National Bank, 180 bls.; Chase National Bank, 50 bls.; Ignazio Ibela & Co., 92 bls.; E. Butterworth & Co., 220 bls.; Klein Products Co., 32 bls.; Whaling Waste Products Co., 60 bls.; Central Union Trust Co., 73 coils; William Steck & Co., 340 bls.; E. J. Keller Co., 440 bls.; Order, 1,575 bls.

Paper

Paper imports into the United States in April last recorded a little decline as compared with the preceding month and



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—know what you are going to get; know its design and construction; know that it will give you longer years of uninterrupted service. You get this and more from Manitowoc Equipment because:

1. Only the best grade of materials is used.
2. Highest class of workmanship is maintained throughout.
3. All pieces are precision-made.
4. Heavily and durably constructed.
5. All equipment is built for longer life.

Our experience of over a quarter century in designing and building Digesters, Incinerators, Disc Evaporators, Refiners, Barking Drums, Blow Pipes, Globe and Cylindrical Rotaries, Rod Mills and other equipment, is your guarantee of satisfaction.

Write us today about your requirements.

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

Sulphur

A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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41 E. 42nd Street New York City
Mine Gulf, Matagorda County, Texas

The survival of the fittest

The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
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BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

also as compared with April a year ago, according to statistics issued by the Department of Commerce in Washington. During April, 1927, the total value of importations of paper of all kinds into this country was $11,317,487, contrasted with $12,237,474 in March this year and $12,584,759 in April last year. In the first four months of the current year imports were valued at $45,931,575, against $44,834,594 in the same time of 1926.

Imports during the month of June, 1927, were about normal, judging from receipts through the port of New York. Some sizable amounts of printing and wrapping paper were received, and also some fair-sized lots of strawboard from Holland. Imports of paper of all kinds through the port of New York in June, these data being taken from manifests of steamers reaching that port during the month, follow:

Printing

New York American and Journal, 1,453 rolls from Hallstavik; Journal of Commerce, 230 rolls from Kotka; New Haven Times, 79 reels from Gothenburg; Martin & Bechtold, 13 cs. from Bremen; Hudson Trading Co., 150 rolls from Ortviken and 243 reels from Rotterdam; B. F. Drakenfeld & Co., 120 cs. from Liverpool; Perkins-Goodwin Co., 458 reels from Bremen and 41 cs. and 56 rolls from Hamburg; P. C. Zuhlke, 377 cs. from Antwerp; G. Henschel & Co., 30 cs. from Hamburg; E. Dietzgen & Co., 12 cs. from Hamburg and 79 cs. from Rotterdam; F. Henjes, Jr., 146 reels from Hamburg; Heemsoth Basse & Co., 52 cs. from Hamburg, 26 cs. Rotterdam and 24 cs. from Antwerp; Walker Goulard Plehn Paper Co., 15 bls. from Trieste and 119 reels from Bremen; Keuffel & Esser Co., 173 rolls and 15 cs. from Hamburg; C. B. Richard & Co., 92 bls. from Hamburg; Oxford University Press, 11 cs. from Liverpool; Perry Ryer & Co., 75 cs. from Glasgow; Ossian Ray, 78 reels from Gothenburg; M. Gottesman & Co., 435 reels from Gothenburg; Miller & Wright Paper Co., 2 cs. from Rotterdam; Bank of Montreal, 9,370 reels from Corner Brook; P. Puttmann, 10 cs. from Havre; A. S. Zabriskie, Inc., 93 reels from Bremen; Order, 1,285 reels from Bremen and 820 reels from Kotka.

Wrapping

International Acceptance Bank, 151 bls. from Oslo; Insight Paper Co., 658 reels from Oslo; M. M. Cohen, 122 reels and 28 bls. from Gothenburg; Wilkinson Bros. & Co., 458 reels and 110 bls. and 29 cs. from Gothenburg; Universal Paper Co., 476 reels and 59 bls. from Gothenburg; Crepe Kraft Co., 38 reels and 10 bls. from Gothenburg; Arkell Safety Bag Co., 530 reels and 23 bls. from Gothenburg and 2 rolls from Oslo; Thomas Barrett & Son, 21 bls. from Gothenburg; C. K. MacAlpine & Co., 157 reels and 49 bls. from Gothenburg; Borregaard Co., 1,786 reels and 193 bls. from Gothenburg; Birn & Wachenheim, 42 cs. from Antwerp; Commonwealth Bank, 30 cs. from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 42 bls. from Glasgow and 49 rolls from Gothenburg; Manhattan Paper Co., 69 bls. and 18 reels from Gothenburg; Steffen Jones & Co., 9 bls. from Rotterdam; E. Dietzgen & Co., 4 cs. from Rotterdam; Steiner Paper Corp., 56 bls. from Oslo; Schenkers, Inc., 100 cs. from Hamburg.

Filter

H. Reeve Angel & Co., 17 cs. from London and 28 cs. from Southampton; J. Hanheimer, 143 bls. from Southampton; Blackmann & Blackmann; 10 rolls from Bordeaux; E. Fougera & Co., 137 cs. from Bordeaux; C. Sleicher & Scholl, 5 cs. from Hamburg; Order, 25 bls. from Southampton.

Writing

Blueprint Paper Co., 20 cs. from Marseilles, E. Dietzgen & Co., 100 cs. from Marseilles; Guibont Freres & Co., 16 cs. from Southampton and 3 cs. from Havre; A. Murphy & Co., 9 cs. from Bremen; American Express Co., 2 cs. from Havre.

Cigarette

P. J. Schweitzer, Inc., 188 cs. from Marseilles; British-American Tobacco Co., 8 cs. from Havre and 10 cs. from Liverpool; Standard Products Corp., 829 cs. from Havre;

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
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Starch

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In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

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"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

UNION SCREEN PLATE CO.

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

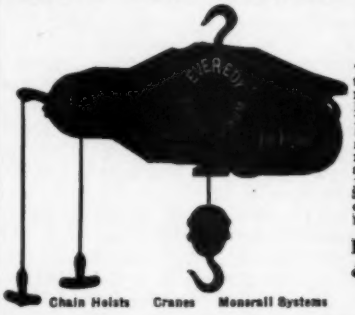
Union Bronze Screen Plates
(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

500 lb. Electric Hoist

$225.00



This Everedy Hoist is the most accessible hoist made. Light—500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy—40 feet per minute A. C., 25 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

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READING, PA.

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Originators and Oldest Manufacturers of the

Cast Bronze Screen Plate

ALSO SPECIALIZE IN
Acid Resisting Digester Parts

SCREEN PLATES *and* DANDY ROLLS

Watermarking a Specialty

Central Manufacturing Co.
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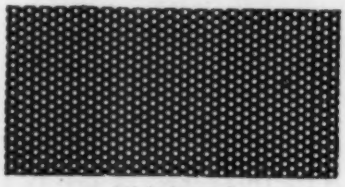
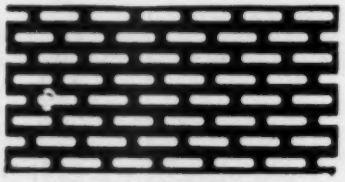
KALAMAZOO MICHIGAN

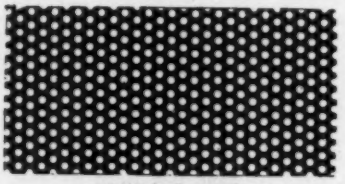
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ¾ inch Slots



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Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS, 57-65 Fairmount Ave., Jersey City, N. J.

Southern Pacific Co., 100 bls. from Genoa; R. J. Reynolds Tobacco Co., 1,700 cs. from St. Nazaire and 200 cs. from Havre; DeManduit Paper Corp., 828 cs. from St. Nazaire; American Tobacco Co., 2,100 cs. from Bordeaux; Surbrug Co., 15 cs. from Havre.

Drawing

Keuffel & Esser Co., 118 pkgs. from Hamburg and 2 cs. from London.

Tissue

F. B. Vandegrift & Co., 22 cs. from Liverpool; J. C. Robold & Co., 7 cs. from Liverpool; H. W. Robinson & Co., 5 cs. from Havre; J. B. Mast & Co., 14 cs. from Genoa.

Hanging

A. C. Dodman Jr. & Co., 10 bls. from Southampton, 6 bls. Liverpool, and 4 cs. London; W. H. S. Lloyd & Co., 22 cs. from Havre and 32 bls. Liverpool; C. A. Haynes & Co., 57 pkgs. from London and 2 bls. Liverpool; Panama-Pacific Lines, 10 bls. from London; F. J. Emmerich & Co., 24 bls. from Liverpool, 35 bls. Hamburg and 22 cs. London; Eleto Co., 17 bls. from Hamburg; R. F. Downing & Co., 5 pkgs. from London; F. A. Binder, 2 bls. from Bremen; A. & H. Trading Corp., 86 bls. from Antwerp; T. C. Dickinson, 9 bls. from Liverpool.

Board

Coty, Inc., 152 cs. from Havre; American Express Co., 46 cs. from Bremen; Globe Shipping Co., 125 bls. from Hamburg; G. M. Thurnauer Co., 18 cs. from Antwerp; F. B. Vandegrift & Co., 6 cs. from London; Perkins-Goodwin Co., 535 rolls from Rotterdam; J. P. Heffernan Paper Co., 288 reels from Rotterdam; Haas Bros., 342 reels from Rotterdam and 164 bls. from Bremen; Adrian Vuyck, 636 rolls from Rotterdam; H. H. Ayer, Inc., 4 cs. from Havre; Grand Corrugated Paper Co., 2 rolls from Rotterdam; Acme Novelty Co., 11 cs. from Antwerp; Robert Wilson Paper Corp., 80 reels from Rotterdam; Fiber Case & Novelty Co., 62 bls. from Gothenburg; State Bank, 132 reels from Rotterdam; C. S. Brown Paper Corp., 19 bls. from Hamburg; Order, 520 reels from Rotterdam.

Photo

Globe Shipping Co., 273 cs. from Bremen; Medo Photo Supply Corp., 9 cs. from London; J. J. Gavin & Co., 7 cs. from Liverpool; Gevaert Co. of America, 300 cs. from Antwerp; Phoenix Shipping Co., 10 cs. from Hamburg; J. H. Schroeder Banking Corp., 6 cs. from Bremen; Richard Shipping Co., 7 cs. from Bremen.

Miscellaneous

Whiting-Patterson Co., 26 cs. from Southampton; Japan Paper Co., 38 cs. from Havre, 8 cs. Rotterdam, 6 cs. London, 3 cs. Gothenburg and 52 cs. Genoa; F. Murray Hill, Inc., 22 cs. from Bremen; Susquehanna Silk Mills, 3 cs. from Bremen; G. D. Kuyper & Co., 25 cs. from Marseilles; F. L. Graemer & Co., 6 cs. from London and 29 cs. Bremen; Hensel, Bruckman & Lorbacher, 43 cs. from Bremen and 30 cs. Havre; Birn & Wachenheim, 39 cs. from Antwerp; Charles W. Williams & Co., 17 cs. from Antwerp; F. C. Strype, 3 cs. from Antwerp and 21 cs. Hamburg; Coenca-Morrison Co., 3 cs. from Hamburg; Quality Art Novelty Co., 6 cs. from Havre and 15 cs. Hamburg; Brown Bros. & Co., 36 cs. from Hamburg; International Forwarding Co., 11 cs. from Hamburg, 94 cs. Rotterdam and 2 cs. London; D. C. Andrews & Co., 182 cs. from Hamburg; E. V. Hadley, 20 cs. from Hamburg; G. W. Sheldon & Co., 4 cs. from Southampton and 4 cs. Liverpool; Corn Exchange Bank, 50 cs. from Antwerp; Borden & Riley Paper Co., 11 cs. from Antwerp; P. H. Petry & Co., 3 cs. from Hamburg, 17 cs. Havre and 9 cs. Rotterdam; T. D. Downing & Co., 4 cs. from Hamburg; F. B. Vandegrift & Co., 2 cs. from Hamburg; S. Gilbert, 30 cs. from Rotterdam; J. Guth, 16 cs. from Rotterdam; Wilkinson Bros. & Co., 125 bls. from Rotterdam; American Shipping Co., 5 pkgs. from Havre; R. F.

DAYTON
High Speed Beaters

Adaptability

The adaptability of Dayton High Speed Beaters to all sorts of conditions, in all sorts of mills, making all sorts of paper is well established.

In the 64 paper mills now using Daytons, are to be found practically all the beating problems likely to arise in paper making.

Superintendents in other plants should learn more about the Dayton High Speed Beater.

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Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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DRAPER BROTHERS COMPANY

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REPRESENTATIVES

L. H. BREYPOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

Uncle Jake says—

"There never was anything made but someone could make it worse and sell it for less."

Consumer KVP Satisfaction

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

Downing & Co., 13 cs. from Havre; Keller-Dorian Paper Co., 27 cs. from Havre and 4 cs. Southampton; J. R. Livermore, 5 cs. from Genoa; United Supply Co., 21 cs. from Hamburg; R. Reeve Angel & Co., 36 cs. from London and 13 cs. Gothenburg; Baldwin Shipping Co., 6 cs. from Havre; Titan Shipping Co., 6 cs. from Havre; E. M. Sergeant Co., 12 cs. from Gothenburg; J. C. Robold & Co., 3 cs. from Havre; Kolesch & Co., 4 cs. from Rotterdam; F. W. Petersohen, 5 cs. and 42 rolls from Rotterdam; W. Van Doorn, 17 cs. from Rotterdam; C. S. Brown Paper Co., 7 bls. from Gothenburg; C. A. Johnson & Co., 8 bls. from Liverpool.

Market Quotations

(*Continued from page 709*)

Provincial Paper 6s, 1940	101½	
Queen City Paper 7s, 1933	97½	100
Richardson Co., 6s, 1938	100	
Riordan Pulp & Paper 6s, 1931	100½	102½
River Rasin Paper Co. 5s, 1936	99½	
St. Anne Paper 6½s, 1946	98	99½
St. Croix Paper 5s, Serial	99	
St. Regis Paper 6s, 1931	99½	100½
Spanish River Paper 8s, 1941	106½	108½
Spanish River Pulp & Paper 6s, 1931	108	110
Stevens & Thompson Paper 6s, 1942	93½	95
Taggart Bros. Co., 6s, 1944	95	98
Tait Paper & Color Industries 6s, 1934	88	92
Ticonderoga Pulp & Paper 5s, 1930	94	
Ticonderoga Pulp & Paper 6s, 1940	99	
Warren S. D. Co. 6s, 1945	99	
Watab Paper 6½s, 1942	102½	
Wayaganack Pulp & Paper 6s, 1951	98	99
Western Quebec Paper 6½s, 1948		80
Whitaker Paper 7s, 1942	106½	
Witmar Parson Pulp & Lumber 8s, units	50	60
Woods Mfg. Co. 6s, 1943	96½	98

STOCKS

	BID	ASKED
Advance Bag & Paper Co. Pfd.	98	
American Book Common	143	147
American Sales Book Co. Common	61	62
American Sales Book Co. Preferred	87	88
American Tissue Mills Preferred	96	99
Beaver Board Co. Preferred	43	45
British Columbian Pulp & Paper Pfd.	65	70
Brompton Pulp & Paper 8% Pfd.	94	98
Brown Corp. Preferred	98	100
Celotex Co. Common	80	
Celotex Co. Preferred	88	90
Champion Fibre 7% Preferred	100	103
Diem & Wing Preferred	88	
Donnacona Paper Common	65	
Donnacona Paper Preferred	98½	
Eastern Mfg. Preferred	27	28
Escanaba Paper Preferred	50	
Gair (Robt.) Preferred	90	95
Great Northern Paper	61	63
Hammermill Paper Preferred	106	110
Hinde & Dauch Common	137	
Hinde & Dauch Preferred	101	
Holyoke Card & Paper	152	
International Pulp Preferred	60	65
Jessup & Moore Paper Co. 1st Preferred		70
Louis De Jonge Co., Preferred	93	95
Marathon Paper Mills Common	126	
Midwest Box Preferred 8%	80	85
Minnesota Ontario Paper 6% Preferred	75	80
Oxford Paper Preferred	106	
Oxford Paper Common	165	
Penobscot Chemical Fibre Common	70	75
Quebec Pulp & Paper Preferred	35	40
Richardson Co. Preferred	105	
Rubberoid Co.	80	83
St. Croix Paper Common	160	
St. Regis Paper Pfd.	100	101
St. Regis Paper Common	50	52
West Virginia Pulp & Paper Common	51¾	53
Whittaker Paper Preferred	98	101
Whitaker Paper Common	55	58

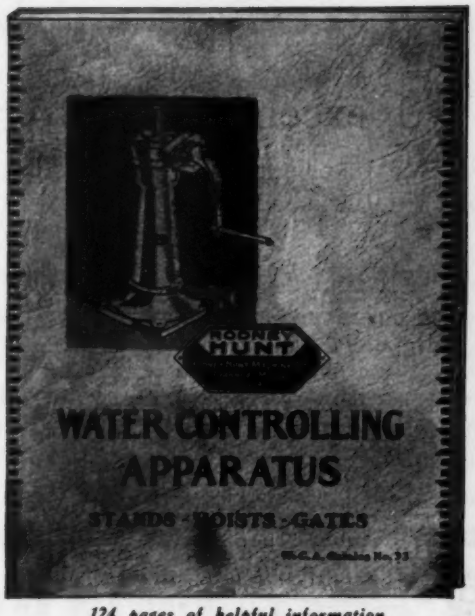
Commercial Arbitration

Arbitration is a logical means of settling commercial disputes. That its value to industry is being more and more appreciated is seen in a recent request to the American Paper and Pulp Association from the Law School of Yale University for information regarding the extent to which commercial arbitration is effective in the paper industry.

The association has developed very practical co-operation with the American Arbitration Association and has been instrumental in satisfactorily settling a number of disputes in the paper industry during the last few years.

Members of the association are urged to make use of its facilities for arbitration as a means of settling commercial disputes without the necessity for prolonged costly legal proceedings.

RODNEY HUNT



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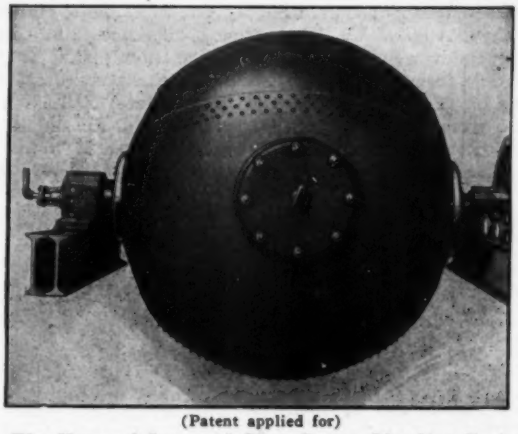
In power required, chemicals consumed and density handled, the improved Biggs challenges comparison with any other bleaching method.

Its uniform results and all-round efficiency effectively back up Biggs' forty-year reputation for consistently good paper mill equipment.



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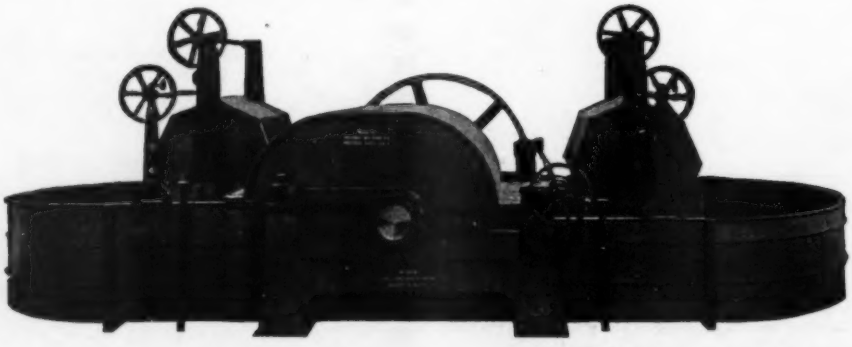

Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors, Super-Calenders, Platers, Cotton and Paper Rolls.